THE IRON AGE

New York, Thursday, June 7, 1906.

Electrical Steel Melting at Disston Plant.

The Pioneer American Electric Steel Furnace.

Henry Disston & Sons, Inc., the famous manufacturers of saws and tools, have, as the pioneers in this country, started the electrical melting of steel at their Tacony Works, near Philadelphia, Pa. Illustrations of the furnace are herewith given.

A considerable number of heats have been made to test the efficiency of the process and the quality of the product, the composition of the mixes remaining the same as in their usual crucible steel process, for better comparison of results. The electrically melted steel has been subjected to the usual chemical and physical tests, and finally used in the manufacture of several of the well-known products of the company, such as hand saws, &c.

The tests thus far made prove conclusively that the electrically melted steel fully meets the requirements of the highest standard of quality, which the Disston firm has established and maintained for so many years. The induction type of electric furnace, built by the Induction Furnace Company, Newark, N. J., under the basic patents of Edward A. Colby, as shown in Fig. 1, was adopted for the reason that this form gives absolute control of temperatures, uniform heating of the entire charge, and no possibility of the introduction of foreign matter, such as carbon, into the steel, as is the case with the resistance and arc type of furnace. For the purpose of economically determining the value of the process, a furnace of small capacity was installed, with a one piece molded graphite crucible, of the form shown in Fig. 3, holding 200 pounds of molten steel.

Fig. 1 illustrates the general form and dimensions of the furnace, with appliance for casting, and Fig. 2 shows the operation of pouring a heat. Both the construction and manipulation are very simple. Briefly, the furnace is an electric transformer or induction coil, in which the metal to be melted is arranged in a closed ring form, in the annular opening of the crucible, Fig. 3. The crucible encircles the central member of a laminated iron core, which extends across the top, two sides and bottom of the crucible, constituting a closed magnetic circuit. This iron door is converted into a powerful magnet of alternating polarity by passing an alternating current of low amperage through a conductor surrounding its central member. With each alteration of current in this latter or primary conductor a current of electricity is induced in the metal placed in the annular cavity of the crucible of sufficient amperage to quickly raise it to the melting point. There is no contact between the primary and

Fig. 1.—Electrical Steel Melting at the Disston Plant.—General Form of the Induction Type of Electric Furnace Used.

secondary circuits, there are no electrodes, and hence no alteration occurs in the composition of the metal operated upon. Complete control of temperature is obtained by the movement of a rheostat arm in the primary circuit, and, since the current in the primary circuit is small, the use of heavy copper conductors is avoided. The steel is melted by the heat developed within its own mass by the passage of the induced current, which is the inverse of the usual order in fuel furnaces,

Fig. 2.—Pouring a Heat of Steel from the Electric Furnace at the Disston Plant.

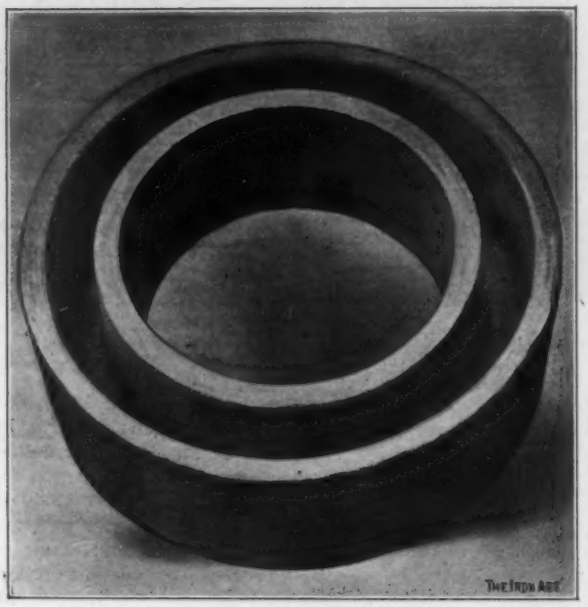


Fig. 3.—The One-Piece Molded Graphite Crucible Used in the Induction Type of Electric Furnace at the Disston Plant.

wherein temperatures far in excess of that actually required to melt the steel must be developed exterior to the crucible and transmitted through its walls to the contained metal.

The excessive temperature incidental to the making of crucible steel in fuel furnaces greatly shortens the life of the crucibles, and the labor of handling them is very exhausting, especially during the summer months. With the induction furnace, however, it is a simple matter to reduce to a minimum heat losses by radiation and conduction, and so materially increase the efficiency of the method, besides permitting the feeding of fresh charges or other operations without interruption or any discomfort to the laborer. The portion of the magnet core surrounded by the crucible is cooled by a water-jacket, which is so effective that, within a distance of 1½ inches, a difference of 3000 degrees F. is easily maintained in all day runs.

In starting the furnace it is necessary either to place a cast steel ring in the crucible cavity or to pour therein molten steel from another source. As soon as this preliminary charge is melted the sectional covers with which the crucible is provided are removed and additional material, in the form of scrap, Swedish pig and other stock, is fed in necessary quantities for the desired composition, until the crucible capacity has been reached.

At the Disston Works the usual charges have been 150 pounds, the cast ingot weighing 90 to 100 pounds, leaving 50 to 60 pounds of molten metal in the furnace after teeming, to which fresh metal is added for the succeeding charge. The melting down of the charge

takes about 20 minutes, and it requires about 40 minutes to "kill" the steel and cast. A heat is, therefore, got off in one hour to one hour and five minutes.

As shown in Figs. 1 and 2, the furnace is mounted on trunnions and can be easily tilted for the purpose of casting the steel into ingots. At Tacony the electric current is supplied by the Keystone Company. The alternating current primary has a pressure of 220 volts and the induced secondary current in the molten steel about 8 volts. The average power consumption in the runs so far made equal 640 kw. hours per ton of steel. With water or producer gas power plants the cost for melting is reduced to between $3 and $4 per ton.

So far as the quality of the product is concerned, it may be noted that since the metal is melted in the absence of fuel gas it yields a very dense and fine grained casting, and its composition is dependent solely upon predetermined additions of material. So far as this work has gone it has established fully in principle the advantages of the electrical furnace of the induction type for the manufacture of crucible steel for saws and tools, with the prospect of material gain in quality, both as to chemical composition and physical properties. With furnaces of larger capacity, say 3 to 6 tons, having built up crucibles, the cost of labor and of maintenance, as well as the consumption of power per ton of ingot, is materially less than with small units, and far more economical than with the fuel type of furnaces. The exact saving in cost is dependent upon the size of unit adopted and the local cost of power.

It is proposed at the Disston Works to continue experiments with much larger furnaces, and so definitely establish the size of unit yielding the best all round results, due consideration being given to the special requirements of the firm's business.

A New Railroad to the Mesaba Range.

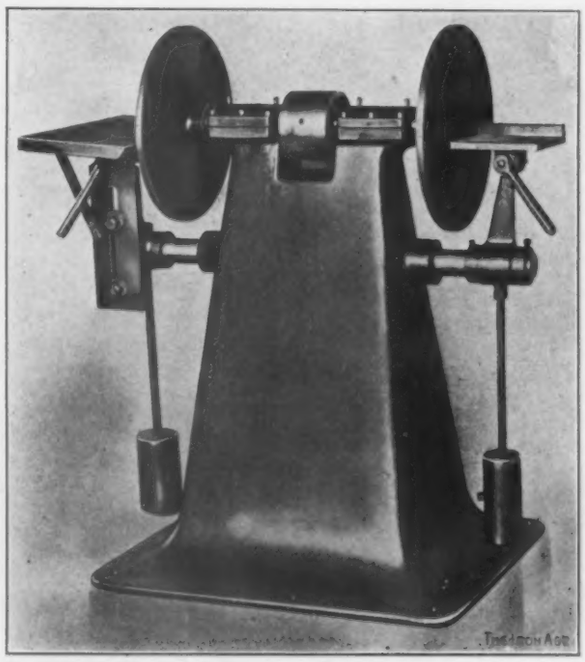
It may be stated on what is considered reliable authority that a fourth railroad will be built to the Mesaba range in northern Minnesota in the next two years. It will have a main line of about 138 miles and will reach from Duluth to Virginia and Hibbing, as well as to points farther west. It is said that about 55,000,000 tons of ore are already tied up to it under traffic contracts that have been made in the past two or three months. These are all from independent steel making and mining concerns, operating lands not tied up to any one of the roads now reaching the range. It is estimated by those in touch with the new road that it will have contracts from mines containing about 100,000,000 tons before it is ready for operation. Such a total at the present standard rate of 80 cents a ton would mean a gross income from ore alone of about $80,000,000. But it is rumored that the proposed road will make a rate somewhat less than that now in force, and that the saving to shippers will be in the neighborhood of 25 per cent. It may be that in this rumor the wish is father to the thought, but there are reasons for believing it to be substantially correct.

The names of interests that have underwritten the bonds of the proposed company are given, but cannot now be repeated. They are amply substantial for any such operation. The spring of 1908 is set as the probable date for the first ore movement to Duluth over this line. Surveys are now in progress and negotiations are said to be under way for terminals and ore piers, &c., in Duluth, not far from the present ore dock system of the Duluth, Missabe & Northern road. D. E. W.

Chicago Track Elevation.—Elevation of railroad tracks in South Chicago, to cost $4,000,000, is provided for in an ordinance recommended for passage by the Council Track Elevation Committee of Chicago. This elevation affects seven roads, as follows: Pittsburgh, Fort Wayne & Chicago, 14.3 miles of track and 19 subways, $1,600,000; Lake Shore & Michigan Southern, 11 2-5 miles of track and 19 subways, $1,500,000; Baltimore & Ohio, 3 1-3 miles of track and 11 subways, $500,000; South Chicago Railroad, 1.2 miles of track and four subways, $150,000; Chicago & Western Indiana, 15 miles of track and 11 subways, $600,000; Chicago, Rock Island & Pacific, 3.5 miles of track, 11 subways, $600,000; Chicago, Lake Shore & Eastern, $20,000. The elevation will start at Stony Island avenue and Seventy-ninth street and continue to the Indiana State line. The number of grade crossings to be eliminated by the ordinance will reach 90.

The Phoenix Disk Grinder.

A disk grinder, which was originally designed by the Phœnix Iron Works Corporation, Hartford, Conn., for use in its own shops, has given such satisfaction in practical service that it will hereafter be manufactured for the market. As may be seen in the engraving, beside each disk is a swinging table, which allows the work to be fed across the face of the wheel. The rocking support of each table is weighted at the bottom to hold it normally upright. The table shown at the right has a guide against which work may be held to accurately grind its ends at right angles. The table is adjustable to any desired vertical angle with the face of the wheel, and may



A New Disk Grinder Built by the Phœnix Iron Works Corporation, Hartford, Conn.

be clamped in position by a turn of the wrench handle just below the table. The other disk is served by a plain table, adjustable vertically on its support to give various distances from the center of the wheel. Like the other table, it may also be set at different angles with the face of the wheel and be clamped in position by a handle. A link tied by a pin to the support serves as a stop to fix accurately and quickly the exact horizontal plane of the table when it is returned from an angular position. The spindle has long bearings, carefully protected from dust, in which end thrust is taken care of by grooving the shaft and casting the babbitted boxes to correspond. A wide pulley permits the use of a slack belt, and the heavy and broad base effectively minimizes vibration.

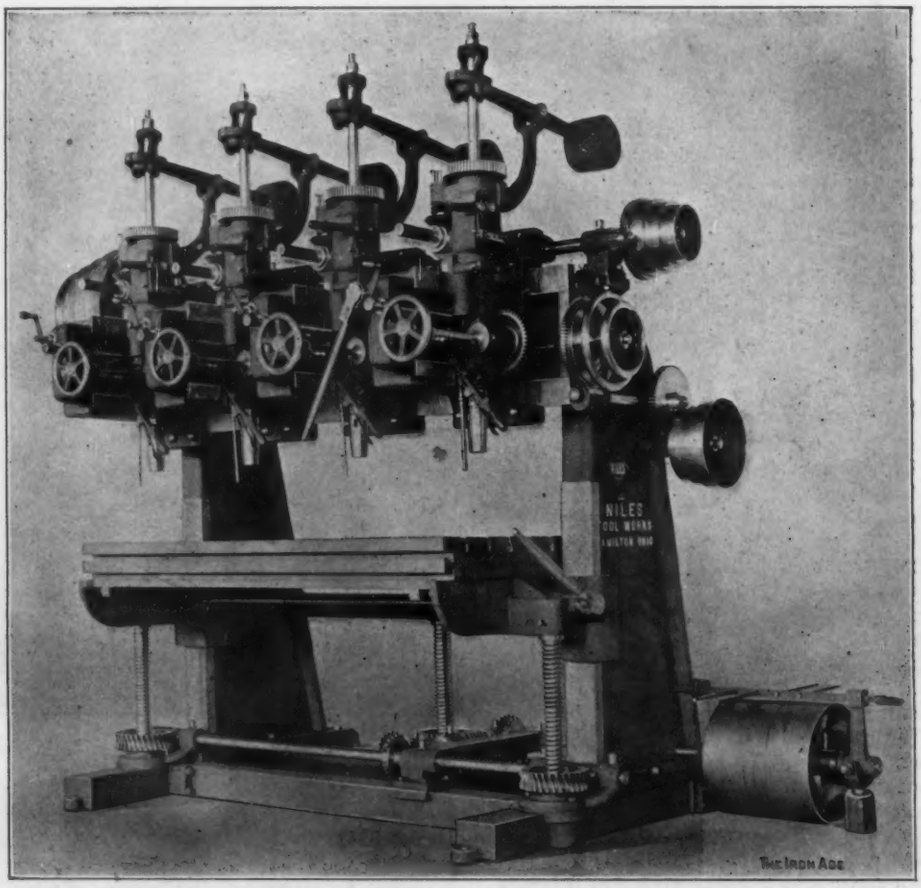
Catalogues Wanted at San Francisco.

Frederick J. Teggart, librarian of the Mechanics' Mercantile Library, San Francisco, states that a temporary building is now being erected for the purposes of that institution, and it is expected that it will be ready for occupancy very shortly. Among the items which have been asked for frequently during the last few weeks are trade catalogues of all kinds. Mr. Teggart will be greatly pleased if manufacturers generally will send their catalogues to him, so that they may be readily accessible for consultation by those who are now engaged in building up the new San Francisco.

A New Niles Four-Spindle Drill.

The novel feature of the multiple drill illustrated, which is a recent product of the Niles works of the Niles-Bement-Pond Company, New York City, is the in and out adjustment of the drill heads, these being mounted on arms on which they have a traverse of 12 inches. The arms may be moved on the cross rail by ratchet levers operating pinions engaging a rack on the rail. The drill heads are adjusted on the arms by screws. This construction is convenient for drilling holes which are not in line, as the spindles can be brought easily to the desired position and the piece finished at one setting.

The table is supported by three heavy screws, which enable it to be raised and lowered by power, so that the table can be quickly set at any hight. The table top may be moved horizontally at right angles to the cross rail by means of racks and pinions operated by a ratchet lever. This is advantageous when a number of lines of holes



The Niles Multiple Drill with Cross Traverse to the Spindles.

are to be drilled in a piece, as the work can all be done at one setting by simply shifting the table. The front of the table is slotted so that high work such as mud rings of locomotive boilers may be bolted to it.

Three changes of power feed to the spindles are provided. All the spindles may be moved simultaneously up and down by hand from the end of the cross rail. The spindles also have independent rapid hand movement, independent drive and feed clutches and quick return. The distance between the housings is 7 feet, and the maximum distance between the ends of the spindles and the table is 34 inches.

In a process recently developed in England the mercury pump method, commonly employed for obtaining the high vacuum required in incandescent lamps, has been superseded. The older method, while quite satisfactory, is slow in operation, and required a considerable volume of apparatus where a large number of lamps were being manufactured. The new process is very simple and quick in operation, depending upon the absorptive power of charcoal. It appears that when charcoal is given a very low temperature its absorption of air is so energetic that, when placed in a tube attached to the vessel to be exhausted, the air in tube and vessel is almost immediately absorbed when the tube is immersed in liquid air. Connection between tube and vessel is then broken and the vessel "contains" a high vacuum. An incidental advantage is that the moisture in the air is condensed in the tube and hence removed from the vessel.

The Coal Tar Jubilee.

The semicentennial of the discovery of coal tar will be commemorated by a banquet and symposium on the development of the coal tar industry to be held under the auspices of the Chemists' Club of New York City on October 6. This was decided upon at a meeting of the Chemists' Club on May 28, and at the same session arrangements were made for the presentation to Dr. W. H. Perkin, who is responsible for the discovery of coal tar, of a personal token, the form of which is to be decided upon later.

The Chemists' Club also arranged for the establishment of a Perkin medal, to be awarded annually for distinguished work in the field of applied chemistry, and in connection with the same movement a fund will be started for the establishment at the Chemists' Club of a reference and circulating library covering the entire field of theoretical and applied chemistry. It is estimated that about $5000 will be needed to cover the expenses of the presentation to Dr. Perkin and the establishment of the Perkin medal, and it is said that about $50,000 will be necessary for placing the proposed library on a permanent footing. The date of the banquet was fixed subject to the approval of Dr. Perkin, who is to be invited as the guest of honor, and the celebration will be held at Delmonico's. A committee which was appointed some time ago for the "coal tar jubilee," as the members of the club have called the proposed celebration, was continued and directed to take steps to carry out the decision of the meeting, which was in accordance with recommendations made by the committee.

Steel Structures in the San Francisco Disaster.

Effects of Fire, Dynamite and Earthquake Upon the Skyscraper, the Only Surviving Type of Building—Excellent Performance of the Steel Skeleton Frame When Protected by Good Fireproofing—Concrete Floors Withstood the Ordeal—Reinforced Concrete Walls Fastened to Steel Frames Advocated.

BY GEORGE SIMPSON.*

It is still too early to get exact information as to how the steel structures of San Francisco stood the earthquake and fire, on account of the immense amount of *débris* which has to be cleared away before all parts of the structure can be examined. But enough is now evident to give a very fair idea as to what happened and how the various classes of structures stood the test.

The effects of the earthquake on frame structures are principally shown by fallen chimneys and cracked plaster. The character of the workmanship on these buildings stands out very plainly in the way in which they have stood the test. Good material and workmanship have been but very little damaged, whereas poor material and workmanship have crumbled and fallen beneath the shakes. A number of frame structures have fallen, but they all show that they have been "skinned" in every way. Almost all the chimneys in frame structures have been laid up in lime and mortar, and this class of material is entirely inadequate to withstand the racking caused by the earthquake, with the result that a very large proportion of houses had their chimneys thrown down. This is also true of small brick buildings. The results show that this class of buildings has been more badly damaged than any other class, the weak bond between the mortar and the brick work allowing the walls easily to disintegrate. A great many of the cheaper hotels were built of brick walls, laid up in lime mortar, and wooden beams resting on the walls. It was in these buildings that the effects of the earthquake were most disastrous, shaking them down while the rooms were occupied; and it is probable that in such buildings the greatest loss of life occurred.

FIG. 1.—THE $7,000,000 CITY HALL AND HALL OF RECORDS.

Totally wrecked by earthquake and fire. The building was three stories high, built of common brick faced with cement to resemble stone. Excepting underneath the 330-foot tower and dome the building was wall bearing.

Brick walls laid up in Portland cement mortar, with the floor beams properly anchored into them, would probably withstand the shock of an earthquake. This is shown by the condition of the Pacific Hotel, the walls of which were standing intact, although they had been subjected to the shocks of the earthquake and the fierce fire which had raged in the building, burning out every other part of the structure.

Steel Frames Not Damaged by Earthquake.

The effect of the earthquake on the steel structures speaks well for the construction of these buildings in San Francisco. So far as the writer was able to learn, not one of the steel frames was damaged by the earthquake, although the buildings must have been pretty well racked by the shocks. This is shown by the cracks in the piers

* Mr. Simpson, who is the chief engineer of the Thompson-Starrett Company, construction engineers, New York, went to the ruined city immediately after the great catastrophe, remaining there several weeks examining the remains of the most important structures.

between windows, and in the condition of the brick, stone and terra cotta fronts. There is scarcely any building in the city which has not some crack of this sort, resulting from the earthquake. It is probable also that the plaster has been thrown down in these buildings, and that the fireproofing, especially terra cotta, has been cracked; but the evidence of this has been entirely destroyed by the fire. Wherever there were evidences of the earthquake on the streets it did not seem to affect the foundations of a building. The street at the southwest corner of the post office has sunk 5 or 6 feet; but this corner of the building does not seem to have settled at all. This is also true of the street in front of the City Hall. Both these buildings were built over the bed of an old stream and had piling for their foundations.

Several suggestions have been made as to building earthquake proof buildings, but there seems to be no need of changing the method of constructing the foundations and the steel frames. Greater care ought to be taken in building the walls of such buildings and in anchoring them to the framework. There is no question but that reinforced concrete walls would be the best construction as the reinforcing steel could be fastened to the steel frame.

FIG. 2.—KOHL BUILDING.

The only office building in which the offices were not entirely cleaned out by fire. Several of the upper floors were saved completely with their contents. The building had concrete floors and steel trim, with metal window frames, but wooden sash.

Damage by Dynamite and Fire.

A great deal of damage was done to fireproof buildings in San Francisco by the use of dynamite—a damage that to-day seems to have been needless. The Monadnock Building had one charge of dynamite exploded in the basement, which tore out two floors and probably did a great deal of damage to the walls, a damage which might have been attributed to the earthquake. This is also true of the Kamm and Rialto Buildings. The damage from the earthquake, although a very large total in itself, was relatively small in comparison with the damage caused by fire.

A large proportion of the buildings in San Francisco being of wood, the wreck was most complete, the fire being so intense that the sites of former wooden structures have now but a few pieces of charred wood and some bent pipes to show that they were ever occupied. Small brick nonfireproof buildings were also razed to the ground, with here and there a chimney standing and an occasional grate with a gas log in it uninjured.

Near the business part of the city, where the buildings were larger and better built, the walls stood better. All wooden floors were entirely cleaned out, and wherever steel columns and girders were used the whole is a great mass of twisted steel. The falling walls left balanced in the air many curious things. In one case, four beams cantilever 20 feet out from a 16-inch wall, without any support except the anchorage they have in the wall; in the City Hall, a great entablature is balanced on two columns; there are many cases of the lower part of a wall falling out while the upper part is arched between two piers.

As a rule the fireproof buildings of the city are standing, in a state of more or less destruction. In only one building are there any offices left untouched by the fire. This building had cement floors and steel trim, thus reducing the amount of inflammable material in it, and this one example shows that it is possible to make a building

so that its contents will not be destroyed, even in the midst of a fierce fire. There are evidences in other buildings that if there had been less material to burn in them the destruction to the building would have been less; that is, the loss from outside fire was small in comparison with that resulting from the fire produced by the material in the building itself.

FIG. 3.—CROCKER BUILDING.

The outside walls, which were self supporting, withstood the fire and earthquake better than other parts of the building. Broken terra cotta floor arches are shown in Fig. 23, and the ruins of the top floor, due to the burning of the wooden roof, are shown in Fig. 34.

FIG. 4.—MILLS BUILDING.

This was a wall bearing structure, with steel frame sustaining terra cotta floor arches. Column coverings and partitions were also of terra cotta. Failure of the partitions is shown in Fig. 22. Twisted and buckled steel columns due to the failure of the fireproofing are shown in Figs. 24 and 27.

Performance of Different Fireproofings.

The fire tested thoroughly the various methods of fireproofing steel structures. Concrete stood the test well, there being little or no damage to any steel work which was fireproofed with concrete, while terra cotta was torn off and destroyed in almost every case. When terra cotta was used the partitions fell down, the fireproofing around

FIG. 5.—ST. FRANCIS HOTEL.

The concrete floor construction of this building remained undamaged. Terra cotta partitions and column coverings also withstood the fire better than in other buildings, due to good workmanship. Two steel columns were badly buckled, as shown in Fig. 25, but they were not amply protected.

FIG. 6.—MERCHANTS' EXCHANGE BUILDING.

In this building the best method of column covering employed in San Francisco was demonstrated. Wire lath and plaster in two thicknesses, with an air space between, was used. The concrete floor construction was not damaged. The building was subjected to a most severe test, which it withstood well.

the columns came off, and a very large proportion of the floor arches either fell out, or the bottom plates of the arches broke off and left the arches in very bad shape.

Columns.—In the great majority of cases the fireproofing of columns was of terra cotta. Very often concrete arches were used, but the partitions and column covering were terra cotta. The result of this destruction of column covering was that there are very few buildings in the city in which there are no columns bent by fire. These bends are usually at the ceiling. It is evident that the flames rising to the ceiling travelled along it until they reached some shaft which formed a flue, and any column in their path was buckled. The form of column covering that seems to have stood most successfully was two thicknesses of wire lath and plaster, with an air space between them. In a number of cases the outside covering was torn off, but it seems to have resisted the fire during the time it was most intense, sufficiently so to allow the inner covering to protect the column.

Ceilings.—Hung ceilings seem to have been very successful in withstanding the fire. These ceilings did excellent service, especially in preventing the fire from reaching the floor arches above them. In the Merchants' Exchange Building, where the heat must have been very intense, there are only a few patches of hung ceiling broken. A number of rooms in this building were used for filing records, and in one such room the ashes of the papers are about two feet deep. The fire that caused this must have produced an intense heat, but the ceiling, while it will have to be replaced, did not break, and successfully prevented the fire from getting at the beams above.

Partitions.—There did not seem to be any partitions which successfully withstood the fire in San Francisco. Terra cotta was very badly damaged and wire lath and plaster became very much bent and warped, owing to the twisting of the steel in their construction. The windows between the halls and the offices also proved to be a very bad thing, as they were easily burned out, adding to the fire, and the flames quickly passed from room to room through the openings thus made.

Fronts.—All the material used in the fronts of the buildings was more or less damaged, stone, of course, showing the worst effects. The granite columns in the first story of the Postal Telegraph Company Building have almost entirely disappeared, through the splitting of the stone. This is true of every place where the flames or heat touched the stone; it spalled off and left the fronts in such bad condition that they will probably have to be taken down. Brick work was also very badly cracked by the heat. Terra cotta did not act very much better than stone. One building on Sutter street, near Montgomery, which was almost entirely of terra cotta, is very badly wrecked. Wireglass seems to have stood the test up to the melting point of the glass. The heat was so intense that glass soon melted and fell out, and quantities of it, in this state, can be seen in the ruins. Wooden floors and sleepers were cleanly burned out; in most cases no evidences of the floors were left, and the only trace of the sleepers is a channel in the concrete filling of the floors. The effect of the heat on terra cotta made it brittle, so that it can easily be broken with the fingers, and the unequal expansion due to the face toward the flame being hotter than that away from it caused the plate toward the flame to crack and fall off.

FIG. 7.—OLD CHRONICLE BUILDING.

At the time of its erection, in 1888, this building was made as nearly fireproof and as safe against earthquakes as the practice of that time permitted. It was the first building of the "skyscraper" type built in San Francisco. The floors fell to the basement, as shown in Fig. 32. A broken cast iron column and broken steel I-beams are shown in Figs. 29 and 30.

FIG. 8.—NEW CHRONICLE BUILDING.

As this building, which adjoins the older building of the same name, was unfinished and unoccupied, no damage was done to it save a little shaking of the front piers by the earthquake. The steel skeleton frame is intact and uninjured. Where there was woodwork in the building to burn the terra cotta floor arches chipped off as in the other buildings.

THE BUILDINGS.

The following is a summary of the writer's observations on a number of fireproof buildings in San Francisco. In the description of the buildings unless otherwise described they have skeleton frames with steel columns:

CITY HALL AND HALL OF RECORDS.

This building is three stories in hight and built of common brick faced with cement, marked off to resemble stone. The main portion is surmounted by a tower and dome some 330 feet high. The outside walls are bearing walls; the interior of the tower and dome is supported on steel, the outside walls being self supporting up to the under side of the dome. The building was commenced in 1871, took a number of years to complete and cost $7,000,000.

The earthquake threw down almost the entire wall on City Hall avenue, also the greater part of the self supporting walls of the tower. The Hall of Records was very little damaged by the earthquake. The columns in the main entrance were immense hollow cast iron columns filled with brick concrete, and these in falling broke into sections. The round columns at the corner of City Hall

FIG. 9.—FAIRMOUNT HOTEL.

Although this building was scarcely completed and unoccupied, the damage done by fire was very considerable. The wire lath partitions and column coverings failed completely and the entire interior of the building was badly gutted. The handsome stone and glazed terra cotta front of the building was badly spalled and smoked. There was no perceptible damage by earthquake. On the left of the picture the ruins of the James Flood residence are shown.

FIG. 10.—THE EMPORIUM.

Having been used as one of San Francisco's largest department stores and being laden with imflammable materials, this building was easy prey for the flames. Much damage was done by dynamite, the fireproofing of the first and second floors being rendered useless thereby. The effect upon the steel columns and girders of the upper floors, which were nonfireproof, is apparent.

avenue and Larkin street stood, supporting the entablature on top of them. The building seems to be a complete wreck as a result of earthquake. The fire got into it, and although very little trace of it can be seen on the outside of the building, the probabilities are that the interior was entirely burned out. It was impossible to get admission to this building.

KOHL BUILDING.

Northeast corner of Montgomery and California streets.
Illustration, Fig. 2.
Eleven stories.
Material of front: Sandstone.
Concrete floor construction.
Column covering and partitions, wire lath and plaster; column covering, double.
Hung ceilings.
Finished cement floors and trim, throughout the building, steel.
Window frames were of metal, but sash was wood.

The effect of the earthquake was very slight. A few cracks appeared in the outside walls, and inside the principal evidence of damage from this source was the shaking loose of the marble wainscoting. The first floor was left in fair condition by the fire. The second and third floors were pretty well burned out. The fourth, fifth and sixth floors were slightly burned, but from there to the roof there was practically no damage from the fire. The flames damaged the stone front, especially the front on California street, where the heat was most intense. The fire outside this building must have been quite as severe as the average; the buildings all around it being burned very badly, with the exception of the one on the east side, which was a low bank building and probably protected the Kohl Building somewhat. During the entire fire two or three men remained in this building and did what they could to put out the flames; but the result of their efforts must have been slight, as they had to carry in pails the water they used to extinguish the fire. This is the only building within the fire zone in San Francisco which had any of the interior left, and it seems to show the methods which should be employed in making a building fireproof, the main thing to be borne in mind being the reduction to a minimum of all inflammable material. The fire did not get into the basement of the Kohl Building at all; consequently, the power plant was uninjured, and elevators were running in two weeks after the earthquake.

CROCKER BUILDING.

Corner of Market and Post streets.
Illustration, Fig. 3.
Ten stories.
Front: Stone, brick and terra cotta.
Floor construction, column covering, partitions: Terra cotta.

The roof of this building was constructed of wood, which soon burned out, leaving the top story a chaotic mass of beams, wire lath and fireproofing. The partitions throughout the building fell down, the covering parted from the columns, and the floor arches, although they did not fall out to any great extent, the bottom plates cracked and fell. With the exception of the roof no steel seems to have been damaged, which is very surprising, considering the condition of the fireproofing.

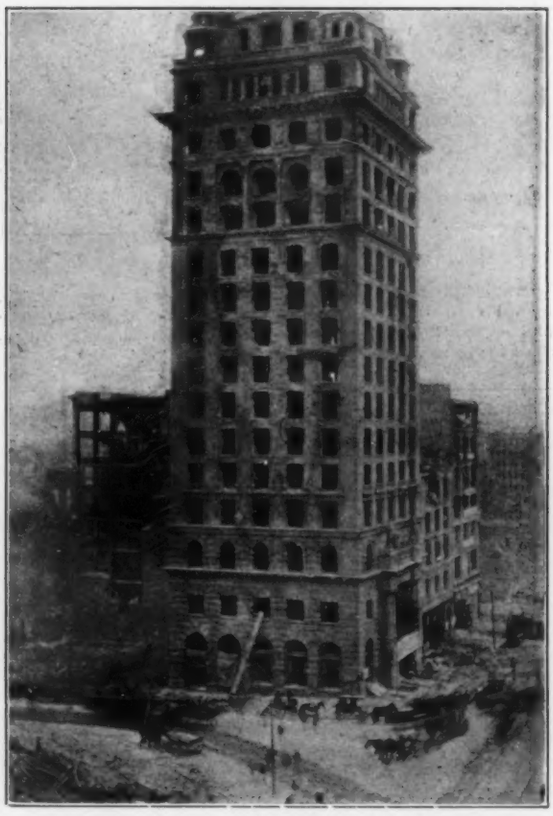


FIG. 11.—CALL BUILDING.

Showing the Third street side, where the fire was fiercest and where the stone work is badly damaged. A report which it was impossible to confirm states that the building is out of plumb. The concrete floor construction, which was of the bottom flange system, stood the fire test well.

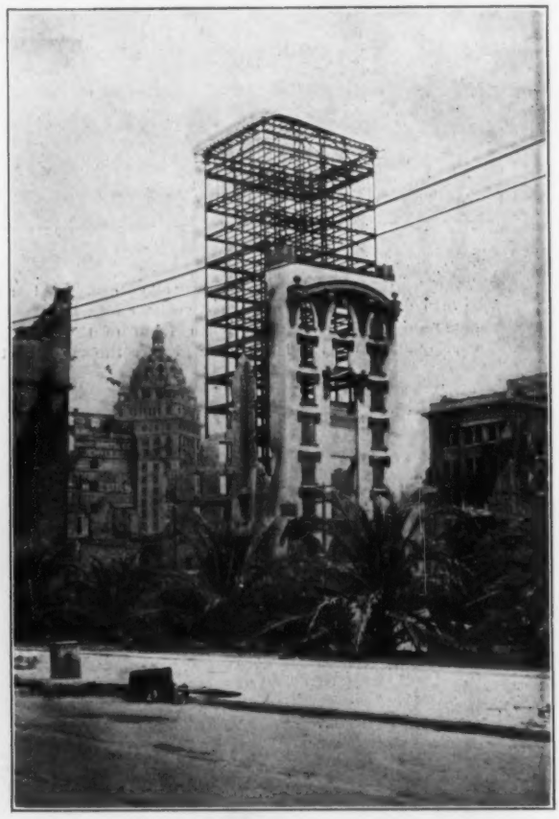


FIG. 12.—WHITTELL BUILDING.

The bare steel skeleton shown in the middle of the engraving is the only work completed on this building, which was in course of construction at the time of the disaster. The original plan of inclosing the building in steel plates will doubtless be changed, owing to the lessons of the great fire.

The construction of the building was not of the skeleton type, the outside walls being self supporting, the steel frame only sustaining the floors. The outside walls are very heavy, and seem to be specially well built; they sustain little damage from the earthquake and fire.

MILLS BUILDING.

Corner of Montgomery and Bush streets.
Illustration, Fig. 4.
Ten stories.
Material of front: Marble, brick and terra cotta.
Floor construction, column covering and partitions: Terra cotta.

This building was not of the skeleton construction type, the outside walls being self supporting, and the steel frame only sustaining the floors. The earthquake slightly cracked some of the walls. The fire cleaned the inside of the building out from the basement to the roof, with the exception of the engine room. The fireproofing was torn from the columns, the partitions crumbled away (see Fig. 22), the floor arches fell out in a number of places, and in a great many other cases the bottom plate of the arch cracked and fell off. Three columns in the basement were buckled, one of them very badly (see

FIG. 13.—MONADNOCK BUILDING.

Pacific Hotel on one side and Call Building on the other side of it. This building would not have been very seriously damaged had it not been for the great amount of unnecessary dynamiting done to it. Details of the damage are shown in Figs. 31 and 26.

FIG. 15.—SLOANE BUILDING.

One of the few examples of the failure of cast iron columns in the fire is furnished by this building. Being used as a furniture store, it was filled with highly inflammable material, and the fire was very intense. Practically the entire interior of the structure sunk several feet. It was also affected by earthquake.

FIG 14.—KAMM BUILDING.

Another illustration of the extensive damage wrought by dynamiting is afforded by this building. It is a total wreck, owing to the extensive destruction due to dynamiting. The steel columns are mostly all standing, but they are buckled, and the floors have been torn loose and are hanging from the columns.

FIG. 16.—CITY OF PARIS DRY GOODS COMPANY BUILDING.

The principal damage here was also done by dynamite. The southeast corner of the building, which was dynamited, was entirely destroyed, and in this section alone is the framework badly damaged. The fire did its worst work in the two lower stories.

Fig. 27). The interior court was built with glazed brick and cast iron mullions. The glazing peeled off the bricks and the mullions bent badly.

The heat in the basement was very intense, the sidewalk beams are badly bent, the sidewalk in places presenting the appearance of waves.

With the exception of the damage done to the stone by the fire the front walls seem to be in good condition.

ST. FRANCIS HOTEL.

Union Square, corner of Geary and Powell streets.
Illustration, Fig. 5.
Twelve stories.
Front: Stone.
Floor construction: Concrete.
Partitions and column covering: Terra cotta.
Hung ceilings.

The floor construction was undamaged. The partitions and column covering in this building were not so seriously affected as in the great number of other cases where terra cotta was employed for these purposes. The fire reached two columns in the mezzanine story and buckled them (see Fig. 25); otherwise there was no damage to the steel work. The court was lined with pressed brick, which had but very little bond with the common brick backing, and this lining was either shaken off by the earthquake or destroyed by exposure to the fire.

The front, although well blackened by the smoke, was not much damaged by the fire. The extension to the building, for which the steel frame was almost complete, was but little damaged, and few beams and one column were bent. Any evidences of earthquake were very largely covered up by the fire damage. The stone piers in the front and some brick piers inside are cracked.

MERCHANTS' EXCHANGE BUILDING.

California street near Montgomery street.
Illustration, Fig. 6.
Fourteen stories.
Material of front: Stone, brick and terra cotta.
Floor construction: Concrete.
Column covering: Two thicknesses of wire lath and plaster, with air space between.
Partitions: Wire lath and plaster.
Hung ceilings.

The method of fireproofing the columns in this building stood the fire well. In a number of cases the outside thickness of wire lath and plaster was torn off, but the inner thickness held, with the result that no columns in the building were affected by the fire. This method of fireproofing columns was the most successful of any employed in San Francisco. There is no question that the air space between the two thicknesses of wire lath and plaster contributed to this good result, but it looks very much as if the outside thickness broke the force of the heat and the inner covering was capable of withstanding the amount of heat which reached it. No damage was done to the floor construction, the hung ceiling underneath preventing the flames from reaching it. This ceiling was broken only in a few places. The partitions were very badly twisted out of shape, as were all partitions of this kind subjected to the fire.

The earthquake probably cracked the walls, but a great deal of damage was done to them by the fire, and it is very difficult to arrive at any conclusion as to the relative proportions of the damage resulting from these causes. Both the brick and stone work of the front were damaged. Hung ceilings and the concrete floor thoroughly protected the beams, and there seems to be no damaged steel in the building at all. The fire did not reach the basement, thus leaving the power plant intact. Elevators were running in two weeks after the earthquake. The court walls were laid up in glazed brick. The glazing peeled off in patches, and generally this court wall was in bad shape.

FIG. 17.—HIBERNIA BANK BUILDING.

A typical illustration of the condition of this type of building. The interior was badly gutted by fire and the stone work considerably damaged.

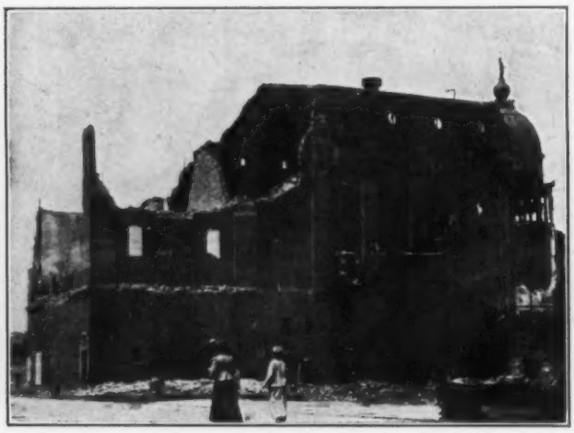


FIG. 19.—MAJESTIC THEATRE.

Damaged by earthquake. The stage end, which was unsupported brick work, collapsed completely, while the steel frame of the forward portion remained standing.

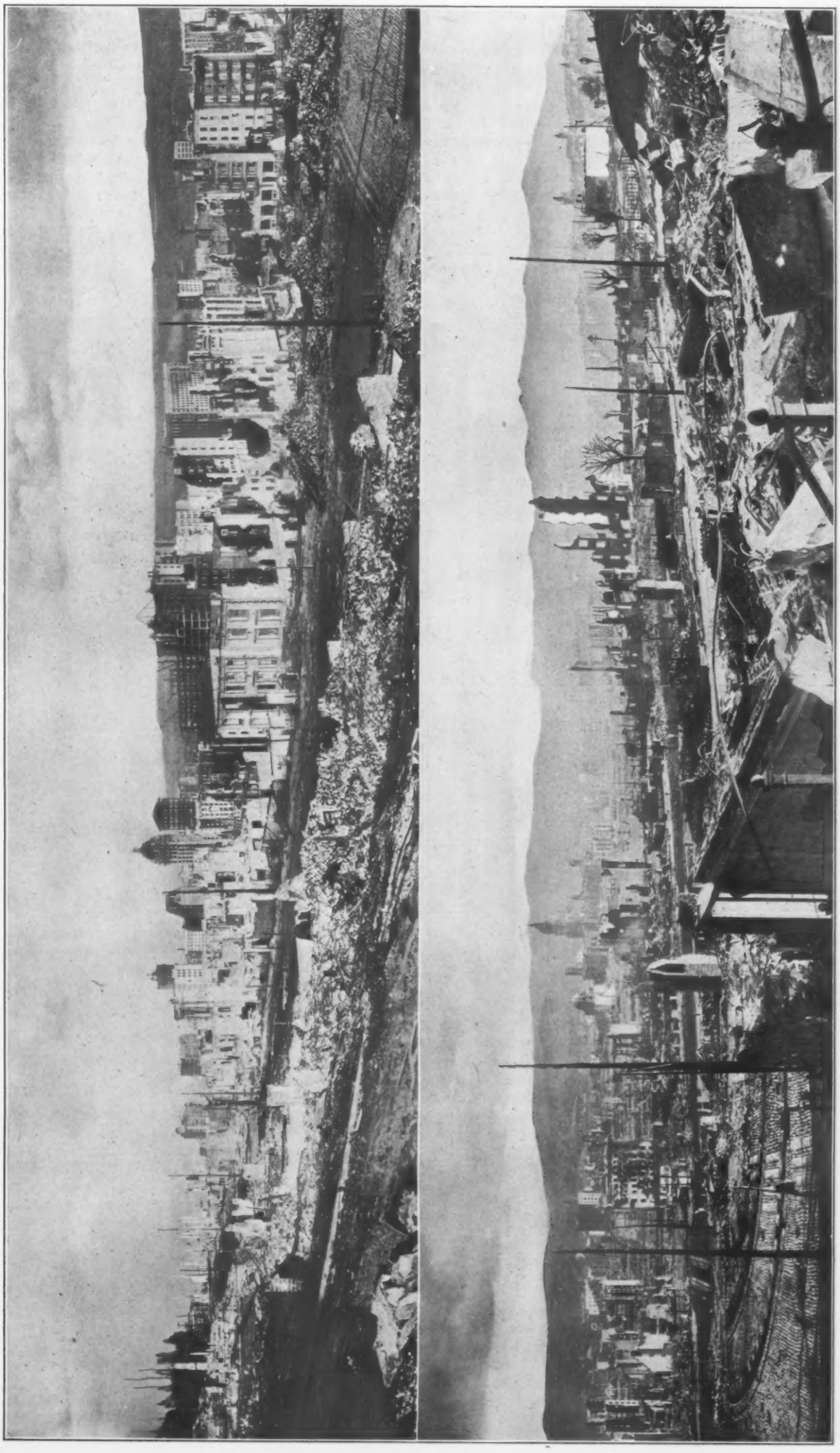
FIG. 18.—ARONSON BUILDING.

Seriously damaged by fire, dynamiting and earthquake, this building presents a sorry picture and is in a dangerous condition. An interior view showing buckled columns and fallen partitions, but undamaged concrete floors, is shown in Fig. 28.

CHRONICLE BUILDING.

Corner Kearny and Market streets.
Illustration, Fig. 7.
Ten stories.
Front: Stone, brick and terra cotta.
Floor construction, column covering and partitions: Terra cotta.

This building is not a skeleton construction, the outside walls being self supporting, with columns built in them to carry the floors. The columns throughout this building are cast iron. All the floors in the building, be-



Figs. 20 and 21.—These two views placed end to end form a panoramic view taken from Nob Hill and show the extent of the devastation in the principal business section of the city.

tween the main entrance and the corner, fell into the basement. There were tenants in this building who continued to occupy their offices until the evening of the day of the earthquake, consequently these floors did not fall from the effects of the earthquake. There was quite an amount of machinery in the top story, the weight of which probably started the top floor to fall, and it carried the rest of the floors with it. There was a fire in this building November last, which carried away the clock tower.

The terra cotta partitions and column covering crumbled and fell, and the terra cotta arches broke and fell in a large number of cases. None of the steel work was damaged, except that in the section of the building which fell. A column in the top story was broken off about the middle (Fig. 30), and two beams supporting a bay window on Kearny street were broken at the wall, where some separator holes had been punched, the ends of the beams hanging down alongside the walls and held by a small amount of metal in the bottom flanges (Fig. 29).

FIG. 22.—RUINS IN THE MILLS BUILDING.
Showing the failure of terra cotta partitions. Similar views were numerous throughout the tall buildings of the city.

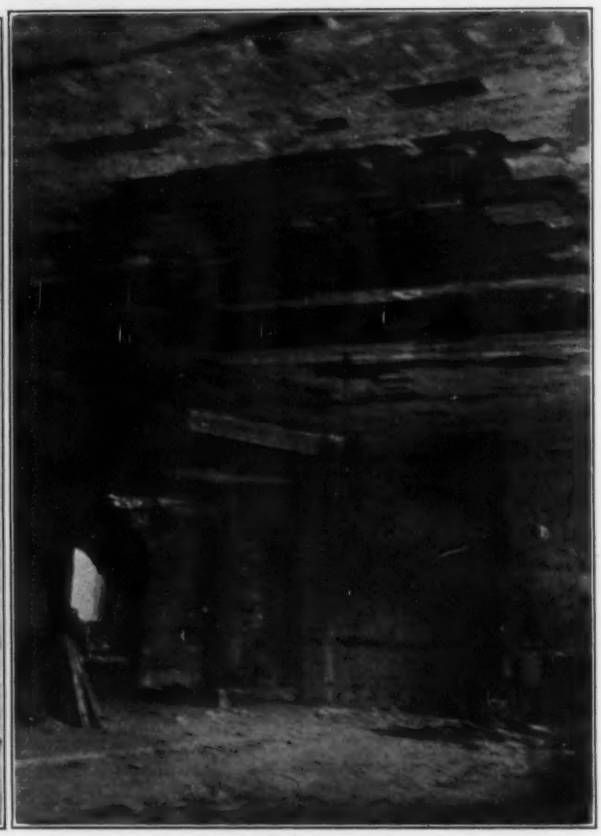


FIG. 23.—VIEW IN THE CROCKER BUILDING.
A typical illustration of the manner in which the bottom plates of the terra cotta arches spalled off.

The new part of the Chronicle Building (Fig. 8) was unfinished and unoccupied. There was, therefore, no damage done to it beyond a little shaking of the front piers by the earthquake. In one or two stories where there was some wood work to burn the bottoms of the terra cotta arches spalled off, as they did in all other buildings where they were exposed to the fire.

FAIRMOUNT HOTEL.
Nob Hill.

Illustration, Fig. 9.
Five stories.
Front: Stone and glazed terra cotta.
Floor construction: Concrete.
Column covering and partitions: Wire lath and plaster.

This building was not yet occupied, but the greater part of the building was ready for occupancy, and, no doubt, if this fire had not happened the hotel would have been open for guests within a short time. There did not seem to be any effect by earthquake. The fire cleaned the building out very thoroughly, damaging the interior to a great extent. The stone of the front was badly spalled by the fire and the terra cotta was blacked by the smoke.

EMPORIUM.
Market street.

Illustration, Fig. 10.
Seven stories.
Front: Stone.
First and second stories fireproofed.
Floor construction and column covering: Terra cotta.

At present all that remains of this building is an ugly pile of twisted steel. The fire seems to have burned out the structure very completely, but it would probably have been less of a ruin had it not been dynamited. There is no way of telling whether the earthquake had any effect, but it probably had little beyond a few cracks in the walls. The upper stories were not fireproof, but had steel columns and girders. The effect of the fire on this form of construction was evident in the twisting and bending of the steel.

CALL BUILDING.
Corner of Third and Market streets.

Illustration, Fig. 11.
Nineteen stories.
Front: Sandstone.
Floor construction: Concrete.
Partitions and column covering: Terra cotta.

It was reported that this building was out of plumb, but this was not evident to the eye, and at the time of writing no one was allowed in the building to make an examination of it. The partitions and column covering throughout the building were very badly damaged. The floor construction was the bottom flange system, and, so far as the writer could see, stood the fire test well. The flames on the east side of the building were the fiercest, and therefore the stone work on this side of the building was very badly damaged.

It would be hard to say how extensive the damage from the earthquake was because of the serious damage by fire, but it is not likely that it was very much.

WHITTELL BUILDING.

Illustration, Fig. 12.
Fifteen stories.

The steel work of this building had just been completed, and none of the other work had been started. Flames from the adjacent buildings bent a few of the

beams in the first and second stories; but, with these exceptions, the frame work stands just as it was before the earthquake and fire. It was reported that the owner of this building intended to inclose it in steel plates, with the object of making it earthquake proof. It is needless to say that, while this might make the building capable of resisting the effects of earthquakes, it would not render it fireproof, and, as most of the destruction in San Fran-

Fig. 24.—Twisted Columns in the Mills Building.

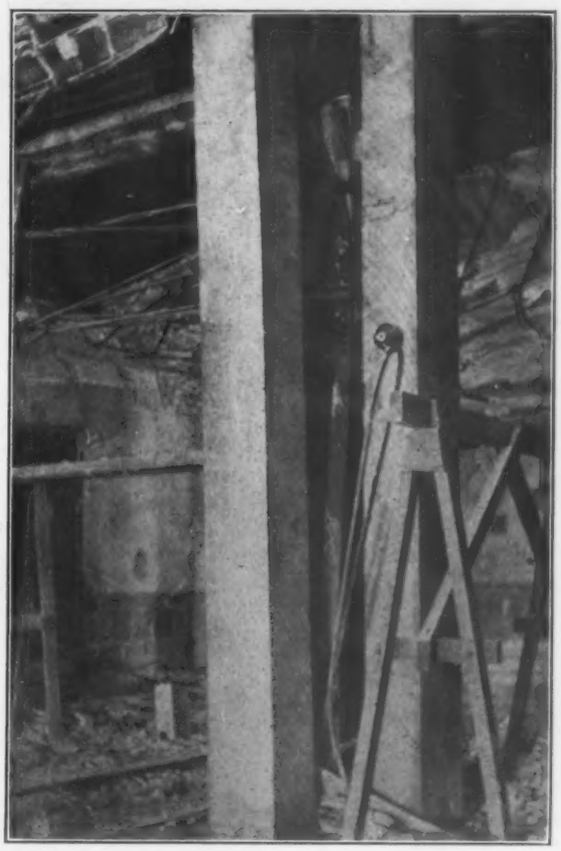


Fig. 25.—Warped column in the St. Francis Hotel. Two of these columns acting in this manner had not been amply protected by fireproofing.

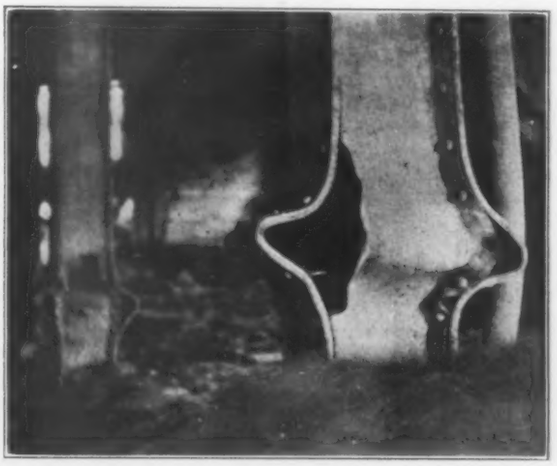


Fig. 26.—Buckled Columns in the Monadnock Building.

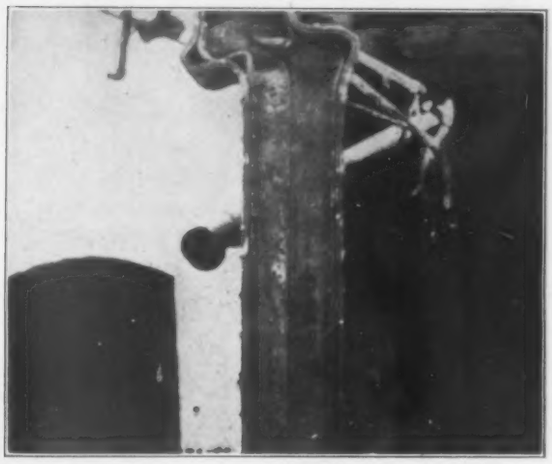


Fig. 27.—Buckled Column in the Mills Building.

Fig. 28.—View in the Aronson Building showing buckled columns due to broken terra cotta coverings, while concrete floors resisted the fire.

TWISTED AND BUCKLED STEEL COLUMNS.

cisco was caused by the fire, it would be far better in finishing the building to follow the usual, approved methods of fireproofing the steel.

As will be noted in Fig. 12, the entire erection of the steel work of this building was completed without putting in any of the floor arches.

MONADNOCK BUILDING.

Market and Annie streets.
Illustration, Fig. 13.
Ten stories.
Front: Stone and brick.
Floor construction: Steel girders, concrete beams and floor slabs.
Partitions and column covering: Wire lath and plaster.

This building was not completed when the earthquake and fire happened; consequently the fire did little damage to it. Parts of the building have been dynamited, and it is difficult to determine whether the cracks in the walls are due to dynamite or to earthquake. The walls on Market street are quite badly cracked, and at the corner of Annie and Market streets the side on Annie street shows a large crack, practically from the roof down. Some of the wall on Annie street, at the rear of the building, has fallen out. No such serious damage has been done to any building by the earthquake, and there is no question that this damage is largely due to dynamite. One charge of dynamite, placed in the basement, blew out arches in the first and second floors and struck the ceiling of the second story, breaking the wire lath. The Hearst Building, next door, was dynamited after the fire, and this also must have injuriously affected the Monadnock Building. As the building was in an unfinished state, all the columns were not fireproofed; and in the basement, where there was an intense heat, due to the burning of a large quantity of lumber, two of the columns buckled, as shown in Fig. 26.

Fig. 29.—View in old Chronicle Building showing steel I-beams broken off at separator holes near their ends.

KAMM BUILDING.

Stevenson street, near Third street.
Illustration, Fig. 14.
Eight stories.
Brick walls.
Floor construction: Concrete.
Column covering and partitions: Wire lath and plaster.

This building was connected with a building on Market street, occupied by a dealer in wall paper, and there was a large stock of wall paper in the basement of the Kamm Building. The building is a total wreck from the use of dynamite. The steel columns are mostly all standing, but they are buckled and the floors have been torn loose and are hanging from the columns. Large sections of the walls have fallen down. Nothing could be learned from this building as to the effects of earthquake and fire, owing to the extensive destruction due to dynamiting.

SLOANE BUILDING.

Post street, between Kearney street and Grant avenue.
Illustration, Fig. 15.
Seven stories.
Front: Brick and terra cotta.
Floor construction: Concrete.
Column covering: Terra cotta.
Columns: Cast iron.

This building was used as a furniture store, and was affected by the earthquake, but not to such extent as to make it unserviceable. The front walls were greatly damaged by the fire, so much so that evidences of earthquake were almost completed destroyed. There must have been an intense heat in the building, as it buckled several columns in the basement, and practically the whole interior of the structure sunk several feet. This is one of the few examples of the failure of cast iron columns in the fire. As a rule, this material came through without much damage.

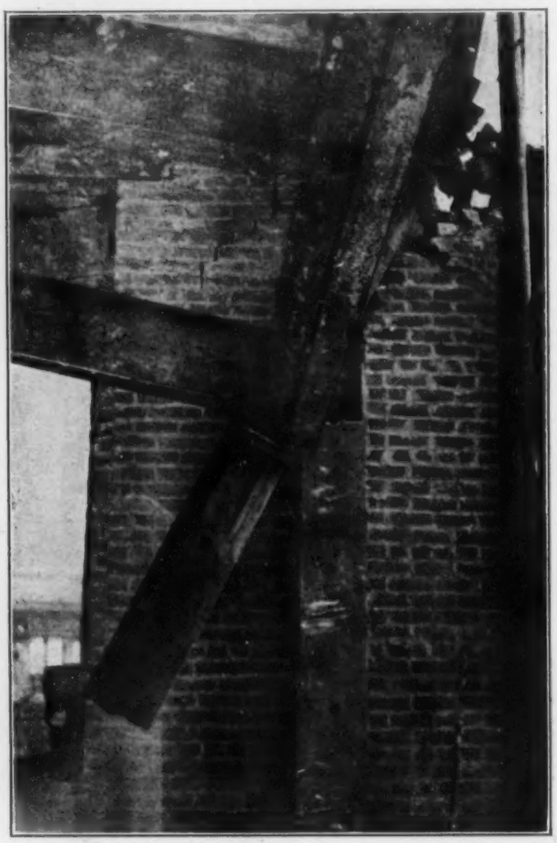


Fig. 30.—View in old Chronicle Building. A cast iron column located in the top story broken off about midway.

CITY OF PARIS DRY GOODS COMPANY BUILDING.

Southeast corner of Geary and Stockton streets.
Illustration, Fig. 16.
Six stories.
Front: Stone, brick and terra cotta.
Floor construction, column covering, partitions: Terra cotta.

The front of this building is in very fair condition, the flames having damaged but a small part of the stone work. The terra cotta in the interior of the building has been seriously affected, especially in the lower stories, the partitions being thrown down, the column covering broken off, and the bottom plates of the arches fallen out. The condition of the frame work seems to be pretty fair, with the exception of that in the southeast corner, which was dynamited. The dynamite destroyed this corner of the building thoroughly. There are no evidences of the earthquake, although these may have been destroyed by fire or dynamite. The fire in this building seems to have been

fiercest in the two lower stories, which were occupied by a dry goods company: apparently above these stories the fire could not have been so intense, as the resultant damage was less.

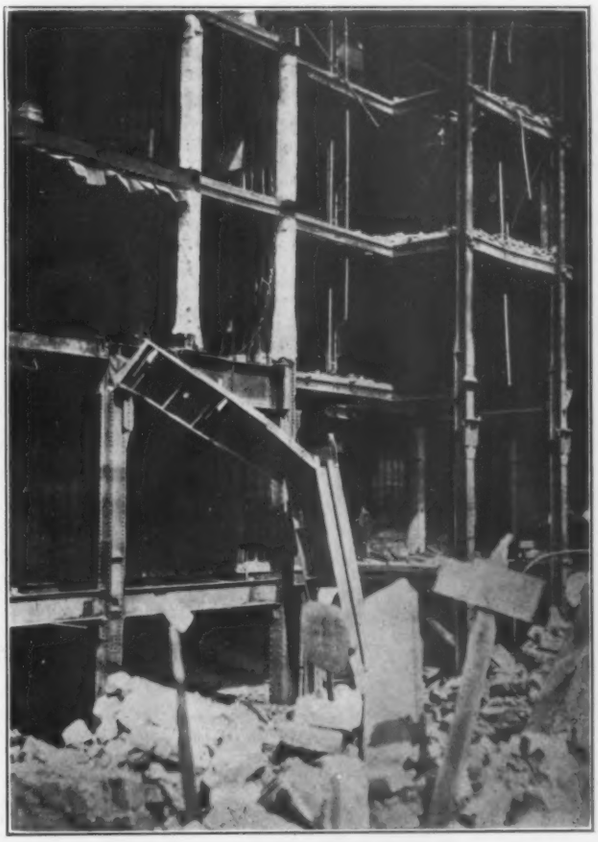


Fig. 31.—West side of Monadnock Building, showing damage due to dynamiting.

Fig. 32.—Bottom of old Chronicle Building, showing fallen floor beams.

ARONSON BUILDING.
Corner Third and Mission streets.
Illustration, Fig. 18.
Ten stories.
Front: Stone, brick and terra cotta.
Floor construction: Concrete.
Column covering and partitions: Terra cotta.

The front of this building was very badly damaged by fire; also, probably, by earthquake and dynamite. The interior partitions all fell down, and in several cases columns were exposed to the flames, with the result that they buckled, leaving the interior of the building in a dangerous condition. The concrete floors stood, as is shown by the picture of the buckled columns in the building in Fig. 28. There were no hung ceilings; consequently the concrete had to stand the full force of the flames, which it did without any material damage.

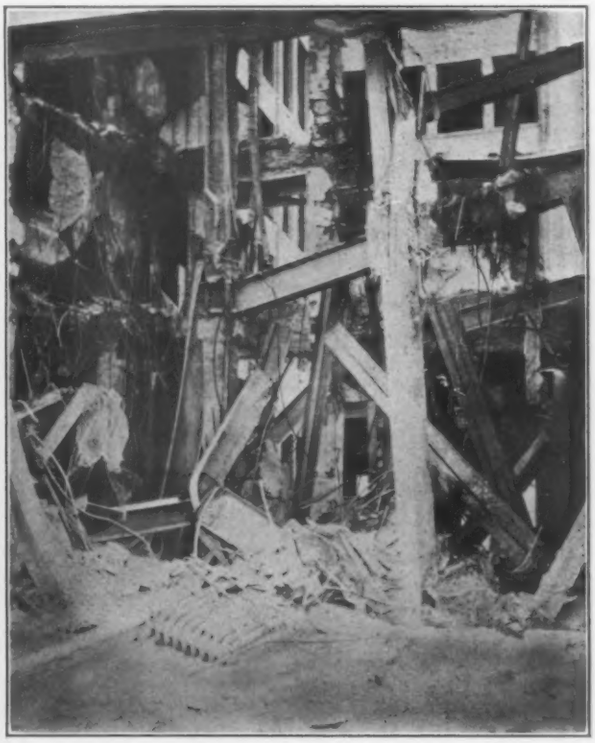


Fig. 33.—Bottom of Rialto Building, showing mass of twisted ruins.

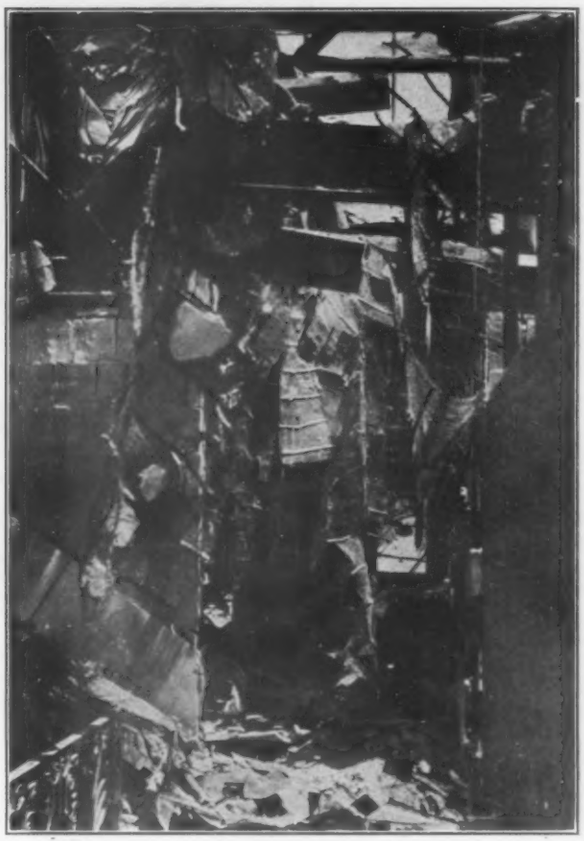


Fig. 34.—Top of Crocker Building. Ruins due to burning of wooden roof.

FLOOD BUILDING.

Market street.

Eleven stories.
Front: Stone.
Floor construction: Terra cotta, segmental arches.
Column covering and partitions: Terra cotta.
Hung ceilings.

With the exception of the first story, the hung ceilings protected the terra cotta arches in this building, and they sustained little or no damage. The partitions and column coverings have been all broken and thrown down. Evidently no steel was exposed to the flame, except in the first story, where several columns were slightly bent from heat. The east wall of this building was a very large expanse of solid brick, which was uninjured by the fire. No signs of earthquake appear in this wall. Some of the front piers were cracked, but no serious damage seems to have been occasioned by the earthquake. The building was completely gutted by the fire.

removed all evidence of possible earthquake damage. In a number of cases the terra cotta had fallen out, leaving the steel exposed in the outside walls, and in such instances the steel was twisted as an effect of the fire. The floor arches held well, as in all other instances of concrete arch construction. The terra cotta partitions and column covering were very badly damaged, and in the case of at least one column the covering permitted the fire to reach the column and buckle it. A panel of arches, through several floors, was torn out, evidently by the falling of some heavy weight.

RIALTO BUILDING.

Corner of Mission and New Montgomery streets.

Eight stories.
Front: Brick and terra cotta.
Floor construction: Concrete.
Column covering and partitions: Wire lath and plaster.

It is impossible to determine whether or not the earth-

Fig. 35.—Nonfireproofed Wall Bearing Structure on Mission Street, Showing Effect of Heat Upon the Unprotected Steel.

POST OFFICE.

Corner of Seventh and Mission streets.

Three stories.
Front: Stone.

The stone work of this building has been very badly shaken by the earthquake; particularly that on the east side. At the southwest corner the street sunk 5 or 6 feet, allowing the bottom stones of the platform, which extends around the building, to drop away and leave a space of 1 to 2 feet between the platform and the stones beneath. The interior of the building has not been very seriously damaged, the principal effects showing in the marble wainscoting. The mosiac ceilings stood very well. Quite extensive damage to this building must have been occasioned by the use of dynamite. In the second story the corridors are lined with transoms and glass paneled doors, and not a single piece of glass has been left unbroken in these transoms and doors; this is the effect of dynamite. The building suffered but slightly from fire.

Building on north side Sutter street, between Kearny and Montgomery streets.

Eight stories.
Front: Almost entirely of terra cotta.
Floor construction: Concrete.
Partitions and column covering: Terra cotta.

The exterior terra cotta of this building was very badly broken as a result of the fire; so badly that it re-

quake damaged this building, because of the effects of dynamite. The fire cleaned out the building thoroughly, but it is doubtful that it damaged any of the steel work, for the reason that the fireproofing was of a type that stood the flames well in other buildings. The southeast and northwest corners of the building were dynamited, and these portions of the building are in ruins, the floors from the roof down have fallen into the basement. Columns were buckled, and beams were hanging from them in a tangled masses. One column stood without a lateral support from the first floor to the roof.

WELLS FARGO BUILDING.

Corner of Mission and Second streets.

Six stories.
Front: Stone, brick and terra cotta.
Floor construction: Concrete.
Partitions and column covering: Wire lath and plaster.

The interior of this building was completely burned out. The fire damaged the front to a considerable extent. There were very few cracks from the earthquake. No steel was damaged. The partitions in this building stood the fire well, probably due to the fire not being as fierce as in other buildings. The plaster was destroyed, but with few exceptions the wire lath was in good condition and work had already begun taking the old plaster off in preparation for putting on new. There seemed to have been no damage to the floor arches.

ATLAS BUILDING.

Mission street, near Second street.

Ten stories.
Front: Rough brick, with cement finish.
Floor construction: Concrete.
Column covering and partitions: Wire lath and plaster.

This was a new and unoccupied building and the damage from fire was consequently not very large. The walls were cracked, either from dynamite or earthquake; probably from dynamite, as it was used very freely in the vicinity of this building. At the time of writing several tenants are in the building.

Next to this building is standing the only nonfireproof building in the burned district. How it escaped the fire it would be very hard to say, as all the buildings around it, even fireproof buildings, were burned.

MUTUAL SAVINGS BANK.

Market and Geary, near Kearny streets.

Eleven stories.
Front: Stone.
Floor construction: Concrete.
Column covering and partitions: Wire lath and plaster.

The steel frame appears to be in good condition, but the writer was unable to gain admission to make any kind of an examination. The front on Market street was not much injured, but that on Geary street was ruined. This is due to the fact that the wind was from the south and blew the flames through on the Geary street side. The fire cleaned the interior of the building out very thoroughly, but judging from what could be seen from the outside, the partitions and column covering stood remarkably well.

UNION TRUST BUILDING.

Corner Montgomery and Market streets.

Ten stories.
Front: Brick, stone and terra cotta.
Floor construction, column covering and partitions: Terra cotta.

The floor arches were broken, the column covering torn off and a large number of the partitions fell down. The fire did not seem to be fierce enough in this building to do any damage to the uncovered steel. The front was in fair shape, although quite a little of the stone work was damaged by the fire. There seemed to be little or no damage from the earthquake.

SHREVE BUILDING.

Corner of Post street and Grant avenue.

Ten stories.
Front: Sandstone.
Floor construction: Concrete.
Partitions and column covering: Wire lath and plaster.

There seems to have been little or no effect of the earthquake upon this building. The flames destroyed the front stone work, particularly that of the front on Grant avenue. The contents of the building were burned and the whole interior wrecked. None of the steel in the building appears to have been damaged.

NEWMAN AND LEVINSON BUILDING.

Southwest corner of Geary and Stockton streets.

The only part of this building in place was the steel frame, which was very nearly completed. About three stories of the stone work had been erected. Very little damage was done to the steel. In places where there was wood it burned out, and, in a number of cases, buckled the beams. This applies only to the lower stories; in the upper, the paint, red lead, is practically unaffected. There were no evidences of earthquake.

LOW BANK BUILDINGS.

There are a number of low fireproof bank buildings in the city to which no access could be obtained because of the precautions taken to safeguard the contents of the vaults. Generally the condition of the exterior of such buildings was the same as in the case of the Hibernia Bank, a picture of which is shown in Fig. 17. The fire entered all of them, probably burning up everything combustible inside and producing heat intense enough to destroy the stone work of the exteriors.

Henry Grey has obtained a patent on an ingot mold and has assigned it to the American Universal Mill Company of New York. The invention consists of a partible mold for casting an ingot corresponding in shape and proportions to the contour of an I-beam. The inventor claims that by having the ingot of this form it can be most economically rolled and without undue strains being set up through one part of the blank being unduly elongated and having to drag the other part of the blank along with it. Further, the amount of steel going into scrap is much reduced, it is claimed, and there is a saving of much work in the rolls. The inventor has provided means of obviating the difficulties attending the making of an ingot which in cross section is thinner in its central portion or web than at the heads or flanges.

The Production of Structural Shapes.

THE American Iron and Steel Association has received complete statistics of the production of iron and steel structural shapes in the United States in 1905. These statistics shapes embrace the production of beams, beam girders, zee bars, tees, channels, angles, and other structural forms, but they do not include plates or girders made from plates. Plates are provided for under other classifications, and in the general statistics of plates are included all plates cut to specifications.

The total production of strictly structural shapes in 1905 was 1,660,519 tons, against 949,146 tons in 1904, an increase of 711,373 tons, or over 74.9 per cent. Of the total production in 1905 about 1,648,889 tons were rolled from steel and about 11,630 tons from iron, against about 941,127 tons from steel and about 8019 tons from iron in 1904. The production of structural shapes in 1904 and 1905 by States was as follows, in gross tons:

States.—Gross tons.	1904.	1905.
New York and New Jersey	47,657	125,422
Pennsylvania	829,167	1,410,609
Alabama and Ohio	24,284	53,289
Indiana, Illinois, Wisconsin, Wyoming and California	48,038	71,199
Totals	949,146	1,660,519

Nine States made structural shapes in 1905, against the same number of States in 1904. Wyoming, which made a few tons of iron shapes in 1904, was not a producer in 1905, and Wisconsin, which did not make structural shapes in 1904, was a producer in 1905.

Pennsylvania made over 84.9 per cent. of the total production in 1905, against 87.3 per cent. in 1904; New York over 4.7 per cent., against over 0.6 per cent. in 1904; New Jersey over 2.8 per cent., against over 4.3 per cent. in 1904; and Ohio over 3 per cent., against over 2.5 per cent. in 1904.

The production of 1905 was much the largest ever turned out in one year. The next largest production was in 1902, when an output of 1,300,326 gross tons was attained, falling to 1,095,813 tons the next year and to 949,146 tons in 1904, as above stated.

Analyses of Lake Ores for 1905.—The Lake Superior Iron Ore Association, Cleveland, Ohio, has just issued its annual analysis booklet. It gives complete average cargo analyses of Lake Superior iron ore for the season of 1905. In a few cases instead of the average of cargo analyses of last year, the expected analyses for shipments for 1906 is given. While there are some cases in which the iron content of the ore shipped in 1905 was higher than that of the same ore as shipped in 1904, the instances in which a smaller percentage of iron and a higher percentage of phosphorus are shown by the analyses of 1905 are more numerous. This is in line with the general observation in the lake ore trade, the gradually decreasing iron content requiring larger shipments of ore for the same output of pig iron at the furnaces depending on Lake Superior for their ores. In the case of the Chapin ore, the average of analyses in 1904 showed 59.9498 per cent. in iron and 0.06385 per cent. in phosphorus. In 1905 the average was 58.6636 in iron and 0.0641 in phosphorus. The Helen ore of the Michipicoten Range increased from 58.40 in iron in 1904 to 59.30 last year and at the same time increased in phosphorus from 0.089 to 0.120. The Pioneer ore of the Vermilion Range showed an increase from 62.8688 in iron in 1904 to 63.9249, and decreased in phosphorus from 0.0362 to 0.0351. The Savoy, on the same range, increased in iron from 63.6839 to 64.7586 and decreased in phosphorus from 0.0448 to 0.0402. These analysis pamphlets can be had on application to William B. Treat, secretary of the association, Rockefeller Building, Cleveland.

Electric Drives in Swedish Rolling Mills.

In a letter to the *Electrical World* Julius Korner, Schenectady, N. Y., gives the following interesting information on electrically driven rolling mills in Sweden:

As early as 1894 the Boxholm Iron Works installed two three-phase induction motors of 100 and 70 horse-power, respectively, furnished by the Allmanna Svenska Elektriska Aktiebolaget of Vesteras, which firm has been the leading one in Northern Europe in the alternating current branch of electrical engineering. Shortly thereafter the Hofors Iron Works installed 750 horse-power in motors for driving some of its rolling mills. In the last ten years a great many other iron works have adopted the electrical system to a smaller or larger extent, such as Domnarfvet, 600 horse-power, a large number of smaller motors not included; Horndal, 750 horse-power; Nordiska Metallaktiebolaget, about 1100 horse-power; Fagersta, 2200 horse-power; Sandviken, 2700 horse-power.

The system used in Sweden almost without exception for driving rolling mills is the three-phase. There are several reasons for adopting this system, one of the most important being the simplicity in construction and service of the three-phase induction motor, which is least likely to be damaged from the presence of iron or coal dust. An objection to the use of induction motors is the difficulty of economical speed variation. The Allmanna Svenska Elektriska Aktiebogalet has, however, by using certain inventions of Lindstrom and Danielson, solved this problem in a satisfactory manner. The motors are built either with windings that can be connected for either of two sets of poles, the one being the double of the other, or are built as concatenated (tandem) motors, thus running either at a speed corresponding to the number of poles of the primary motor or at a speed corresponding to the total number of poles of the primary and secondary motors. Motors have also been built with a combination of these two methods, such that either the primary or the secondary of the concatenated motors is provided with a two-speed winding. Some motors of this type are used at Sandviken, one of them consisting of a primary motor with 32 or 64 poles and a secondary motor with 4 poles. The secondary motor is used only in connection with the 32-pole winding of the primary motor, and the machine will thus run at 182, 165 or 91 revolutions per minute, with a normal output of 600, 535 or 300 horse-power, respectively. Another motor of the concatenated type, but with a two-speed secondary motor winding, runs at 428, 375 or 333 revolutions per minute.

At the Fagersta Iron Works there are seven motors for driving the rolling mills, one of which is a 400 horse-power tandem motor, with a speed of 180 and 120 revolutions per minute. Of special interest are the arrangements for driving the large blooming mill at these works. The main motor is a 600 horse-power three-phase induction motor running at 214 revolutions per minute. The power is transmitted by ropes from the motor to a large grooved pulley built as a heavy flywheel (70 tons) and connected to a Lindsay coupling for reversing the rolls. In order to maintain a good power factor and at the same time get more energy out of the fly wheel at light loads the winding of that motor, which at normal load is delta-connected, can be star-connected when the rolling mill is running at half load or less. In addition to the main motor there are several other motors in use, serving different purposes and all operated by one man from a platform.

The three-phase system has proved very satisfactory, not only on account of the good features of the induction motor with respect to safety and low cost of operation, but also with respect to energy economy. An iduction motor, when running above synchronism, will act as a generator and give energy back to the line. Now, when several rolling mill motors, connected to their flywheels, are running on the same electrical system, the energy of the flywheels will be electrically transmitted to the point of heaviest load. When using direct current machinery such heavy fluctuations in load, causing sometimes the machines to run as generators, would probably lead to commutation troubles.

Activity in Manganese Mining in 1905.

In view of the conditions that have existed in the ferromanganese trade in the past year, the comment of the British consul at Batum, Trans-Caucasia, on the manganese ore trade in 1905 will be of interest. Special effort was made last year all along the line to lay stress on the effect of labor troubles in limiting the supply of such ores. The difficulty of obtaining exact information from the Caucasus districts and the urgency of the requirements of consumers of ferromanganese combined to make the position of sellers of the metal quite an independent one in 1905. It was not difficult for ore shippers to get higher prices even from those who had unexpired contracts with them; manufacturers of ferro, in turn, were able to advance prices on their customers in the middle of contract shipments, the consumer being assured that deliveries, which had been scant for some time, could be increased if he would consent to pay more, so that the ore companies could be given the price they asked. The statements below would indicate that the unprecedented demand for ferro last year in all steel making countries was perhaps as much responsible for the advance in prices of ore and metal as the strikes.

The [Caucasus] manganese ore trade, which was depressed for a period extending over four years, commenced to revive again in the spring of 1905. At about this time an important advance in the prices of ore took place, the demand for manganese became brisk, and the mines at Tchiatouri during the rest of the year worked with unprecedented activity, except, of course, on the several occasions on which they were compelled to remain idle in consequence of the vexatious strikes of the year. At one time during the period under review the narrow gauge railroad on the Tchiatouri branch line was working up to 200 trucks per diem, and two or three fresh sidings were added to this branch in order to increase the traffic capacity of the line. These sidings rendered it possible to bring as much as 3000 tons of ore per diem down to the trunk line from the mines. It is reported that the whole of this quantity of manganese is now daily handled, without interruption at the station of Sharopon, where the ore is transferred to other trucks for conveyance to Poti by the broad gauge railroad. The railroad auhorities are alive to the necessity of increasing the carrying and traffic powers of the narrow gauge line, and in other ways introducing improvements in connection with the working of this railroad, which ever since its construction has in years of considerable activity been a source of trouble to the trade.

Suits End in Favor of the Southern Steel Company.

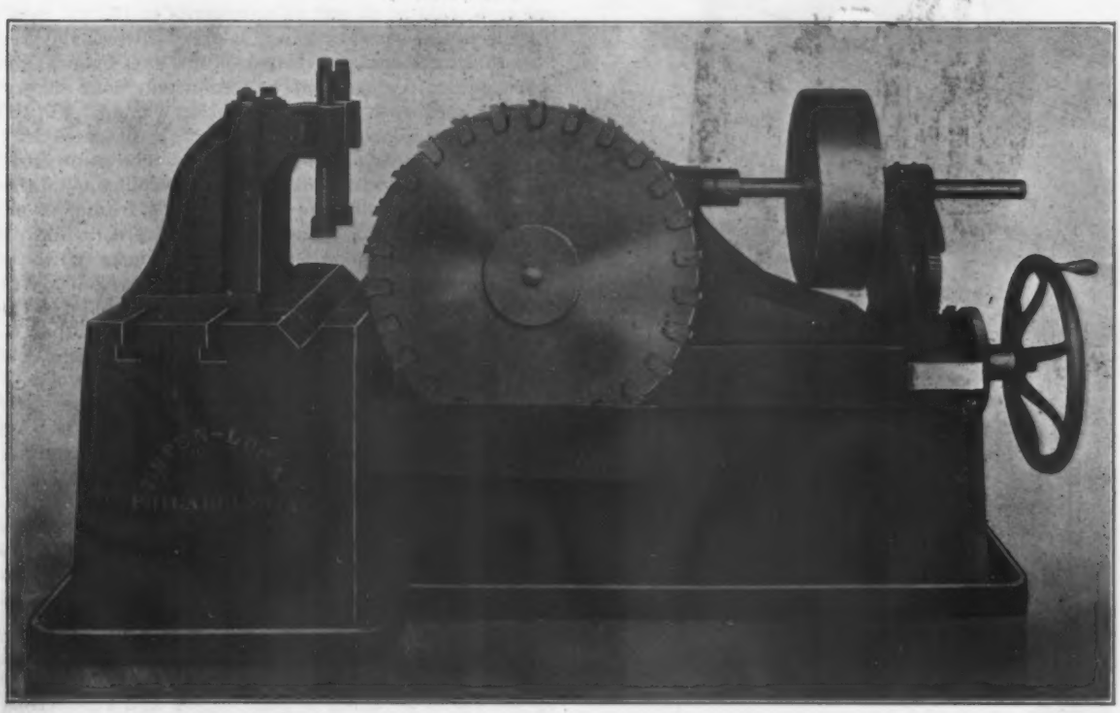
The various damage suits growing out of the explosion at the Virginia coal mine in Alabama, on February 20, 1905, have attracted much attention in that section. One hundred and eleven men lost their lives in the accident and suits were brought on account of each of these deaths against the Alabama Steel & Wire Company, now the Southern Steel Company, owner of the mine. There have been three trials. The first was terminated on account of reaching the end of a term of court. The second trial lasted two weeks and was decided in the company's favor by the jury. Another two weeks' trial ended last week and the jury brought in a verdict for the defendant, after being out about 40 minutes. The evidence in all these cases showed that in the Virginia mine more openings or manways were provided and in use than the laws of Alabama require, and that the ventilation of the mine was of the best, the most approved system being used.

The plaintiff claimed that there was a large amount of gas in the mine, but the testimony showed that there had been but a slight trace in two headings, and that a long time prior to the explosion. It was also shown by the evidence that there was no undue accumulation of dust in the mine, and that the superintendent was employing the best method known among scientists for taking care of it, which consists in hauling it out of the mine. It was in evidence that the person in charge of this part of the work had completed cleaning the last entry the Thursday night prior to the explosion. The evidence also showed that the disaster was caused by a "windy shot" fired by one of the miners, who did not carry out the rules and instructions of the company.

A New Espen-Lucas Cold Saw Cutting Off Machine.

A cold saw for cutting off up to or the equivalent of 9-inch round steel bars that is rather remarkable for its power and capacity is shown in the accompanying half-tone, being a recent product of the Espen-Lucas Machine Works, Philadelphia, Pa. Specially designed for driving a saw blade with inserted teeth of high speed steel it has been given ample power and ability to drive a saw blade of this description up to the limit of its capacity, and is believed to be fully capable of meeting any increased demand that may be made upon it for some time to come. The special points to which attention is directed is that it is of simple construction, has very few parts to get out of order and is easily operated.

The drive is transmitted from the belt pulley shaft to the saw through a hardened hammered crucible steel worm, a phosphor bronze worm wheel and compound gearing made of crucible steel cut from the solid. The saw blade is 30 inches in diameter. The feed is obtained from the driving shaft through gearing which may be seen at the right in the engraving, is variable and automatic and is controlled by an automatic stop that regulates the depth of the cut. The operator can increase or decrease the feed while the machine is working. The castings are all very heavily ribbed inside, and all parts of the machine are made fully capable of withstanding the most severe service. Swivel clamps are furnished that can be placed upon any part of the platen, or entirely removed, permitting of a large variety of angle and special work. The machine occupies a floor space of 40 x 80 inches and weighs about 7000 pounds.



A New 9-Inch Bar Cold Saw Cutting Off Machine Built by the Espen-Lucas Machine Works, Philadelphia, Pa.

The officers of the Metropolitan-Interborough Railway System say that no more of the so-called fireproof cars built of wood with thin copper sheathing will be ordered for use in the New York Subway. This decision is the result of an accident in the Subway on June 1, when a collision between two empty trains resulted in the partial burning of several supposedly fireproof cars. The company is now operating two kinds of cars—steel and copper sheathed—having 300 of the former and 500 of the latter. The steel cars constructed hereafter are to be made even more fireproof by replacing the present rattan woven cushions and wooden flooring with noninflammable material. The Hudson Company states that the cars to be built for use in its Hudson River tunnel will be of steel, with floors of cement covered by mats of rubber or fireproofed wood.

The Electrical Engineers.

The thirty-third annual summer convention of the American Institute of Electrical Engineers was held at Milwaukee from May 28 to 31 and was attended by nearly 200 members from all parts of the United States and Canada. The business sessions, which consisted of the reading of technical papers followed by discussions, were held in the great Public Service Building, which was formally opened for the occasion. The building has been in course of construction for three years and is the largest and finest electric railway terminal station in the world. The courtesies of the Milwaukee Electric Railway & Light Company, which owns the building and uses it for its general offices, station and car house, were extended by President and General Manager John I. Beggs, who is an enthusiastic member of the institute.

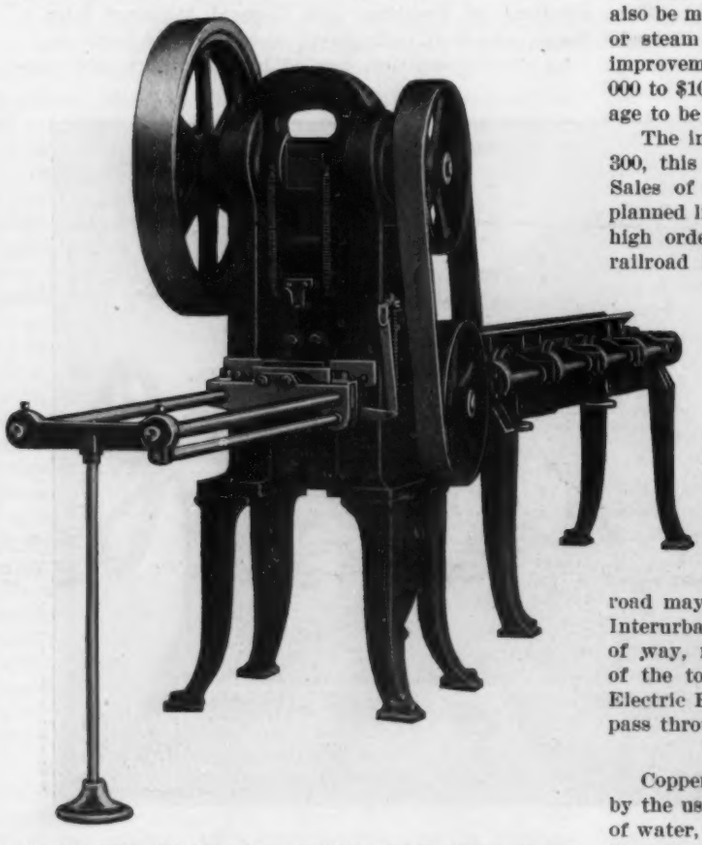
A local committee, headed by Mr. Beggs and composed of representatives of various Milwaukee electrical manufacturing concerns, carried out a number of entertainment features, including, one afternoon, a trip to the plant of the Allis-Chalmers Company at West Allis, the Cutler-Hammer works, the crane works of Pawling & Harnischfeger and other important institutions. President Schuyler Skaats Wheeler presided over the business sessions of the convention, which were held each day from 10 a. m. to 1 p. m. President-elect Samuel Sheldon was present and took an active part in the discussions.

A French engineer has constructed an experimental internal continuous combustion turbine, with the combustion chamber lined with refractory material. Gasoline is fed through a nozzle from a compressor on the turbine shaft and mixed with air, electric ignition being used. The resultant temperature is 1800 degrees C. (3272 degrees F.). The gas given off impinges upon the turbine blades, which are kept cool by low pressure steam let into the casing, the steam being generated in water jackets around the gas nozzle. This turbine is said to have shown an efficiency of 18 per cent., and improvements now being made in the compressor are expected to bring this figure above 25 per cent.

The Waterbury Farrel Special Pillar Shearing Press.

The special pillar shearing press shown in the illustration is built for automatically feeding and cutting into pieces from 6 inches to 4 feet long round bar stock from ⅜ to ⅝ inch diameter. The bar to be cut is placed in a trough, at the bottom of which are feed rolls actuated by a shaft and bevel gears at the side of the machine. The rolls feed the bar until its end strikes the adjustable stop on the skeleton attachment in the foreground. The stop operates the throw off, and causes the shear to act, during which operation the rolls slip under the bar. As the cut off piece falls to the floor the shear knife is withdrawn and the press runs idle until the end of the bar again engages the stop. The cutting off thus continues automatically until the bar has been cut up into the desired number of pieces.

Two simple adjustments—setting the gauge for length and moving the trough so as to enter the stock in the proper die—are all that are required to cut any length or diameter between the limits of the machine stated. The maximum length of bar the machine will handle is 16 feet. The two dies and shear blades furnished with the machine cover the entire range of work, but if it is desired to leave the stock cut off with square ends a close fitting die should be used.



A Special Pillar Shearing Press Built by the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn.

With a fly wheel speed of 180 revolutions the machine has a capacity of about 80 6-inch lengths, or about 45 4-foot lengths per minute. The machine requires a floor space of 28 x 160 inches, has a greatest hight of 65 inches and weighs 3095 pounds. It is built by the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn.

It is now expected that the fiscal year ending June 30 will close with the United States Government balance sheet showing a handsome surplus. Estimates are made that unless Congress during the remaining days of the session should make appropriations payable from this year's revenues the surplus will exceed $10,000,000. This will make a most excellent showing as compared with the situation a year ago, when there was a deficit of more than $24,000,000.

The Steel Corporation's Plant at Gary.

Details are rapidly being worked out by the engineering force of the United States Steel Corporation for the new plant at Gary, Ind., and a diagram will shortly be completed showing the layout of the property. All the section lying between the Grand Calumet River and Lake Michigan will be devoted to the steel plant, while the section south of the river will be utilized for residence purposes. The town site is being subdivided two miles east and west and one mile north and south. The main thoroughfare running north and south will be called Broadway and the one running east and west Fifth avenue. The business lots will be 25 x 125 feet and the residence lots 30 x 125 feet, except in four rows of blocks, where they will be 30 x 150 feet. The alleys in the rear of business streets will be 30 feet wide and in the rear of residences 20 feet. Pipes and conduits for water, sewers, gas, electric light, telephone and telegraph wires will be run under the surface below the alleys and provision will also be made for a conduit system for conveying hot water or steam for heating purposes. It is probable that the improvements will necessitate an expenditure of $8,000,000 to $10,000,000. Estimates place the mileage of sewerage to be laid at 25 and of pavements at 15.

The initial construction of houses will probably reach 300, this number being increased to 1000 by next year. Sales of real estate will be conducted along carefully planned lines with a view to securing a municipality of a high order. Improvements are being prosecuted in the railroad facilities serving the town. The railroads include the Lake Shore & Michigan Southern, the Baltimore & Ohio, Pennsylvania, Wabash, Chicago, Lake Shore & Eastern and Indiana Harbor. All the railroad tracks will be elevated through Gary and the Pennsylvania through Tolleston. The Elgin, Joliet & Eastern, which is owned by the Steel Corporation, will have extensive yards just south of Clark Junction, with a capacity of 60,000 cars. In addition to the rights of way of the various railroads the town will establish a permanent right of way due east and west and north and south, which for a consideration any road may use. The Chicago, Lake Shore & South Bend Interurban Electric Road will use the principal right of way, running east and west along the north border of the town, while the Indiana, Logansport & Chicago Electric Road, which is now under construction, will also pass through Gary.

Copper has been successfully deposited upon aluminum by the use of an anode of pure copper and an electrolyte of water, with a few drops of sulphuric acid in it. After the current had been in action for some time copper sulphate was formed, and from this the copper was deposited. After 30 minutes the plate was taken out and well washed in water, then in a solution of hydrochloric acid, then in sodium hydroxide, and again in water. This operation was repeated several times, the final result being an even deposition of copper all over the plate. Further experiments included the deposit of antimony upon the coppered aluminum plate. Lumps of trisulphide of antimony were placed in a porous pot with a carbon anode, and the cell filled with the electrolyte, which in this case was a concentrated solution of sodium sulphite. On the coppered aluminum cathode the antimony adheres firmly, the current density being 0.0013 amperes per square inch, with a pressure of from 1 to 1.5 volts.

Lehigh University, South Bethlehem, Pa., will hold its commencement exercises June 14, when the address to the graduating class will be made by Dr. Rossiter W. Raymond. A list of the graduates in expectancy shows the following: Candidates for the degree of master of arts, 1; master of science, 2; bachelor of arts, 4; civil engineer, 32; mechanical engineer, 29; engineer of mines, 10; metallurgical engineer, 1; electro-metallurgist, 7; electrical engineer, 15; analytical chemist, 5. Total, 106.

The Official Trademark Classification.

WASHINGTON, D. C., June 5, 1906.—The official classication of merchandise for trademark purposes, which the Commissioner of Patents is required to prepare in accordance with the terms of the Currier law just passed in Congress, has been compiled and will take effect July 1. The most important provision of the law requires that "the Commissioner of Patents shall establish classes of merchandise for the purpose of trademark registration and shall determine the particular description of goods comprised in each class." On a single application for registration a trademark may be registered at the option of the applicant "for any or all goods upon which the mark has actually been used, comprised in a single class of merchandise, provided that the particular description of goods be stated."

Importance of Law.

The importance of this provision has heretofore been noted in this correspondence. It was recently emphasized, however, by ex-Deputy Commissioner of Patents Greeley in a statement before the House Patent Committee. Until 1903, said Mr. Greeley, the Patent Office recognized a single registration of a trademark as covering all kinds of goods belonging to a general commercial class made by a single manufacturer. Under the law as so construed many large concerns making a number of different articles belonging to a general class of goods, such as cutlery, agricultural implements, &c., by a single registration protected their trademark used on their entire output. The present Commissioner of Patents in *ex parte* Faxon held, however, that it was not the intent of Congress to permit the registration of a trademark for all the goods comprised in a class, but that each registration must be limited to a particular description of goods. Many manufacturers under the decision have been obliged to register their trademark 15 or 20 times to protect their entire line of goods, although all the articles produced belong to a single general commercial class. This has been sufficiently annoying and expensive when the sale of these goods has been confined to the United States, but in the case of goods made for export the annoyance has been far greater. In order to protect such goods it has been deemed necessary to trademark them in countries in which they are sold, in many of which the fees are much larger than in the United States.

The Classification.

The importance of the new Currier law, which goes into force July 1, will be recognized when it is understood that the very unsatisfactory conditions referred to by Mr. Greeley will be abolished and trademark owners will be able by a single registration to cover an entire commercial class. Immediately after the passage of the Currier law the Commissioner began the preparation of a schedule in which are embodied what he believes to be the best features of the international classification and those employed in Great Britain and France. This classification, which has now been promulgated for the information of all trademark owners, dealers and others, is as follows:

Group 1. *Raw Materials.*—1. Animal. 2. Mineral. 3. Vegetable.

Group 2. *Manufactured Materials.*—4. Abrasive and polishing materials not included in classes 8 and 16. 5. Adhesives. 6. Chemicals not otherwise classified. 7. Cordage not included in class 13. 8. Detergents. 9. Explosives. 10. Fertilizers. 11. Leather blackings and dressings. 12. Masonry materials. 13. Metal manufactures not otherwise classified. 14. Metals, unwrought and partly wrought. 15. Oils and greases not included in classes 6, 16 and 50. 16. Paints and painters' materials. 17. Wood manufactures not otherwise classified.

Group 3. *Tools, Machinery and Vehicles.*—18. Agricultural and dairy machinery and parts of such machinery. 19. Boats and road vehicles. 20. Cutlery not included in class 61, and edge tools. 21. Electrical apparatus, machines and supplies. 22. Firearms and equipments and projectiles not otherwise classified. 23. Hand tools not otherwise classified. 24. Laundry appliances and machines. 25. Locks and safes. 26. Machinery and parts of machinery not otherwise classified. 27. Railroad equipment not otherwise classified, and railroad rolling stock. 28. Sewing machines and attachments.

Group 4. *Furniture and Household Articles.*—29. Brooms, brushes and dusters. 30. Crockery, earthenware and porcelain. 31. Filters and refrigerators. 32. Furniture and upholstery not otherwise classified. 33. Glassware not otherwise classified. 34. Heating, lighting and ventilating apparatus not included in class 21.

Group 5. *Leather, Paper and Rubber Goods.*—35. Belting, hose and machinery packing. 36. Leather and leather manufactures not otherwise classified. 37. Paper and paper manufactures not otherwise classified. 38. Rubber and minor plastics not otherwise classified.

Group 6. *Dry Goods and Clothing.*—39. Clothing not otherwise classified. 40. Fancy goods, furnishings and notions. 41. Knitted, netted and lace goods. 42. Textiles not otherwise classified. 43. Thread and yarn.

Group 7. *Foods.*—44. Bakery products, cereal foods and yeast. 45. Beverages, nonalcoholic. 46. Coffee, tea and substitutes. 47. Confectionery. 48. Dairy products. 49. Distilled alcoholic liquors. 50. Foods not otherwise classified. 51. Malt liquors. 52. Packing house products. 53. Saccharine foods not included in class 47. 54. Sea foods. 55. Wines.

Group 8. *Miscellaneous.*—56. Canes, parasols and umbrellas. 57. Dental machines, apparatus and supplies. 58. Games and toys, and sporting goods not otherwise classified. 59. Horological instruments. 60. Inks and inking materials. 61. Jewelry, and solid and plated precious-metal ware. 62. Linoleum and oiled cloth. 63. Measuring and scientific apparatus, appliances and instruments. 64. Medical and surgical apparatus, appliances and instruments. 65. Musical instruments and talking machines and supplies therefor. 66. Objects of art and ornament. 67. Pharmaceutical preparations, plasters and proprietary and veterinary medicines. 68. Publications. 69. Smokers' articles not included in class 71. 70. Stationery not otherwise classified. 71. Tobacco products. 72. Merchandise not otherwise classified.

Trademarks Cover Classes, Not Groups.

A single registration of a trademark, it should be understood, will not cover an entire group as given in the above schedule, but merely a class. For example, one registration of a mark will cover "cutlery not included in class 61, and edge tools," as found in class 20. Another registration will cover "locks and safes," as embraced in class 25, &c. The Commissioner will prepare before July 1 a detailed category or index, showing the classification of many thousand articles, so that an applicant for protection may learn at a glance the particular class in which a mark should be registered and may also ascertain the scope of the protection accorded by such registration. W. L. C.

Central American Notes.

SAN JUAN, C. A., May 21, 1906.—A new element is coming into the commercial contest in Spanish America. Up to lately it had only been felt in the line of certain foodstuffs, &c., but machinery and several kinds of hardware are now being shipped from Genoa, Milan and other Italian ports to Latin America, and especially Buenos Ayres and the Pacific ports. Perhaps this is natural in a way, because in the Rio Plata region alone there are over 500,000 Italians, including a number of important business firms.

The news about the Transandine Railroad from Valparaiso, Chile, to Buenos Ayres, on the Atlantic, was rather premature. It is now given out that the unusually heavy snows on the Andes this year will retard the work for at least six months, so that for commercial purposes this important line will not be in working order till February next.

The earthquake shocks along the coast from Colombia to Ecuador have made an end of many of the iron piers and wharves, notably those at Buenaventura, Guayaquil, Esmeraldos and Santa Maria. The English mining companies will be the heaviest losers, several having already telegraphed for new stamp mills, steel girders, &c.

The importation of machinery and material for the Panama Canal through the ports of Colon and Panama is constantly increasing. Workmen are coming from Jamaica, Haiti, Nicaragua and other parts of Central America, and there is a general appearance of greater activity all over the isthmus.

The unsettled political condition of Costa Rica has helped to retard the completion of the Central or Interoceanic line from Limon to Punta Arenas on the Pacific Ocean. However, several cargoes of rails and bridge material are said to be now on the way from New York and Philadelphia.

The rise in the price of silver is doing much to increase importations of all kinds into these silver producing countries. C.

The Newton No. 2 Portable Boring Machine.

The illustrations herewith show a new portable boring, milling and drilling machine, recently designed and built by the Newton Machine Tool Works, Philadelphia. Fig. 1 is a view of the working side, which well displays the mechanism associated with the spindle head, and Fig. 2 shows the drive of the spindle and vertical feed for the head and the drive for feeding and traversing the column on its bed.

The spindle of this machine is 6 inches in diameter, has a continuous automatic feed of 50 inches, with eight changes and has hand slow and quick movement. The feeding of the spindle axially in the saddle is accomplished by hand by the horizontal hand wheel, shown at the extreme right in Fig. 1. This, as may be seen in Fig. 2, connects with a pinion, which engages a rack on the back of the spindle. The power feed is communicated to the main pinion through a worm and worm wheel, the latter being mounted just below the hand wheel. The worm is driven by bevel gears from a feed shaft geared to the motor, which carries a four-step cone pulley. The latter is connected by belt with the mechanism for the slower feed of the spindle. A hand wheel is also provided in connection with this mechanism for operating the spindle lengthwise with a slower hand movement. A clutch engages the bevel gear on the worm shaft when the more rapid movement is in use. The shaft below the feed shaft and intermediate between it and the motor carries the worm which engages the worm wheel splined on the boring bar for revolving the latter.

The spindle head has eight changes of feed for milling vertically, with a movement of 8 feet, rapid power movement being provided for quickly locating position. The spindle head is counterbalanced, the counterweight being inside of the upright, as will be seen by referring to the engravings. On the upright the saddle has a bearing on scraped ways, and the spindle is placed as close as possible to the upright to give it rigidity when cutting. The construction of the saddle bearing is such as to give more and better bearing surface than is obtained in the usual design followed on these machines. The vertical feed of the saddle is operated by hand through the pilot wheel and vertical splined shaft seen at the right side in Fig. 1. This through spiral gears revolves a nut connected with the stationary screw at the side of the column, as seen in Fig. 2. The power feed is obtained from the motor through the gearing at the rear. The shaft, which is driven directly from the spur gear on the motor, carries the worm which drives the worm wheel for rotating the spindle. The power for the drive and movements thus far described is obtained from the 10 horse-power variable speed 4 to 1 motor mounted on the saddle.

For the horizontal quick power movement and feed for milling, a 5 horse-power constant speed motor is mounted on the back of the upright, as shown in Fig. 2, and operates the latter through a spiral pinion and rack. The drive is transmitted with one speed reduction to a worm shaft, which drives a worm wheel connected with a spiral pinion meshing, with a rack on the base; this gives the rapid traverse of the upright. By means of friction disks variations of speed are obtainable for slower feeding movements, the third in the train of friction disks being connected with another worm meshing another worm wheel, also on the shaft with the spiral pinion. Either of these worm wheels are placed in commission by a clutch between them, manipulated by the hand wheel, and engages one or the other to give either quick power traverse to the upright or power feed for milling, both motions being reversed by reversing the motor. The handle just behind the middle disks of the friction drive shifts the latter to vary the feed.

The horizontal feed of the upright covers a distance of 12 feet. The flexibility of the feed, however, permits of any length of base being used, which would not be possible if a screw were used for the movement.

The bottom and edges of the base of the machine are planed parallel with the ways for convenience in setting the work on a floor plate, where the machine will be used.

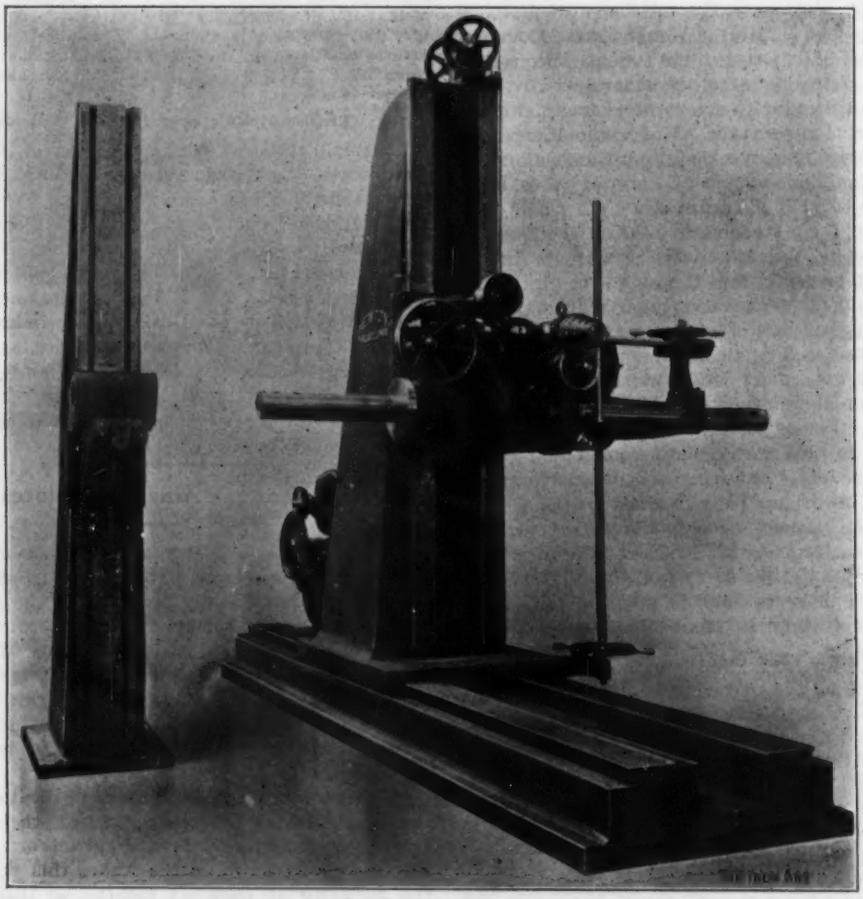


Fig. 1.—The New No. 2 Portable Boring, Milling and Drilling Machine Built by the Newton Machine Tool Works, Philadelphia.

The outboard support for the boring bar is clearly shown in the illustrations and hardly needs any explanation. It is moved from place to place on the floor plate as desired, and the hight of the bearing for the bar is roughly set by sliding and clamping, after which it is adjusted more accurately by a screw. The bearing has both vertical adjustment and adjustment at right angles to its column, as clearly shown in Fig. 1.

In order to distinguish this tool from others of a like nature the builder has designated it as the No. 2 portable boring, milling and drilling machine.

Some Carnegie May Records.—In May the 48-inch mill at the Homestead works of the Carnegie Steel Company made 18,730 tons of plates, the best previous record of this mill having been made in March last, when 17,816 tons were turned out. In the same month the 42-inch mill at this works made 11,670 tons of plates, the best previous record having been 11,413 tons. This latter mill was bought some years ago by the Carnegie Steel Company from the Bethlehem Steel Company, who had operated it only a very short time. In May the 41-inch blooming mill at the Duquesne Steel Works made 37,780 tons of blooms, the best previous record for this mill having been 35,385 tons, made in October, 1905.

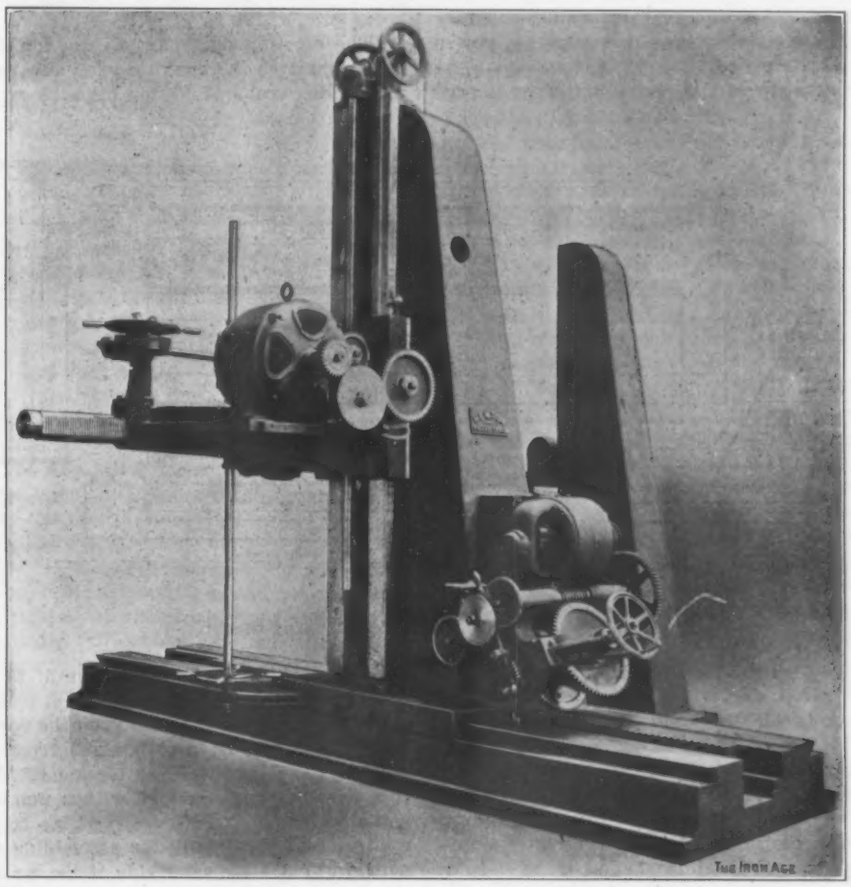


Fig. 2.—Rear View of the Newton No. 2 Portable Boring, Milling and Drilling Machine, Showing the Two Attached Motors.

Coal stored in great heaps deteriorates in quality as time goes on. Slow oxidation takes place and is always accompanied by heat. This often produces spontaneous combustion, and the action of the oxidation cannot be avoided by any known means. To avoid serious results, however, it suffices if means are provided for rapidly carrying off the heat generated, the simplest means being by a free circulation of air through and around the pile. One peculiarity not usually known about stored coal which gets on fire in this way is that a layer of coal becomes coked all around the fire, and drenching the pile with water will not extinguish the fire. In this case the best treatment consists in shoving a sharp pointed piece of perforated pipe into the burning mass, and then turning on the water. In this way the water gets at the seat of the difficulty and performs its natural function.

Representative Garner of Texas introduced a resolution in the House on May 31, directing the Secretary of Commerce and Labor to investigate the causes of the difference in prices of iron and steel when sold in the United States and the prices made on sales abroad, and to ascertain whether the margins between the prices of such articles, when sold in the domestic market, and the selling prices for foreign shipment, have resulted from any combination in the form of a trust or otherwise; also whether prices of iron and steel have been controlled by the United States Steel Corporation or by any combination or corporation, and if so to investigate the organization, capitalization, profits and management of such corporations and make an early report.

One hundred and two spans, aggregating a length of about 10,800 feet, or more than 2 miles, are required for the new railroad bridge across the Hoang Ho. It will serve as a crossing for trains of the Hankau & Peking Railway, and will assist in shortening the time between those cities (754 miles apart) to 36 hours. The river has here a width of about 2 miles, but is shallow. The bridge is constructed of steel, but not of the heavy sections common in American and European practice. It is expected, however, that the relatively frail members will be of ample strength and stiffness to carry without trouble the light locomotives and trains of the line.

The Senate passed, 39 to 16, on June 2, a resolution providing for the purchase of supplies for the Panama Canal in the United States, unless the President deems the prices unreasonable or extortionate.

The foundations of the new County Building, Chicago, will consist of 126 cylindrical concrete piers, resting upon bed rock at an average depth of 115 feet below the street level and varying from 4 to 12 feet in diameter.

The Traylor Mfg. & Construction Company's New Plant.

A modern manufacturing plant which has been laid out with a view to obtaining desirable facilities in the making and handling of heavy machinery, and which will appeal to the interests of those who study the planning of well regulated manufacturing establishments is that of the Traylor Mfg. & Construction Company, now nearing completion at Allentown, Pa. The plant is located near the banks of the Little Lehigh River, beside the tracks of the Lehigh Valley Railroad, and it has been designed to take the place of the company's plant at Belleville, N. J., where it has for some time past been manufacturing all classes of mining machinery. The location is admirable for its railroad facilities, the property having 1800 feet along the railroad tracks. The entire tract amounts to about 19 acres.

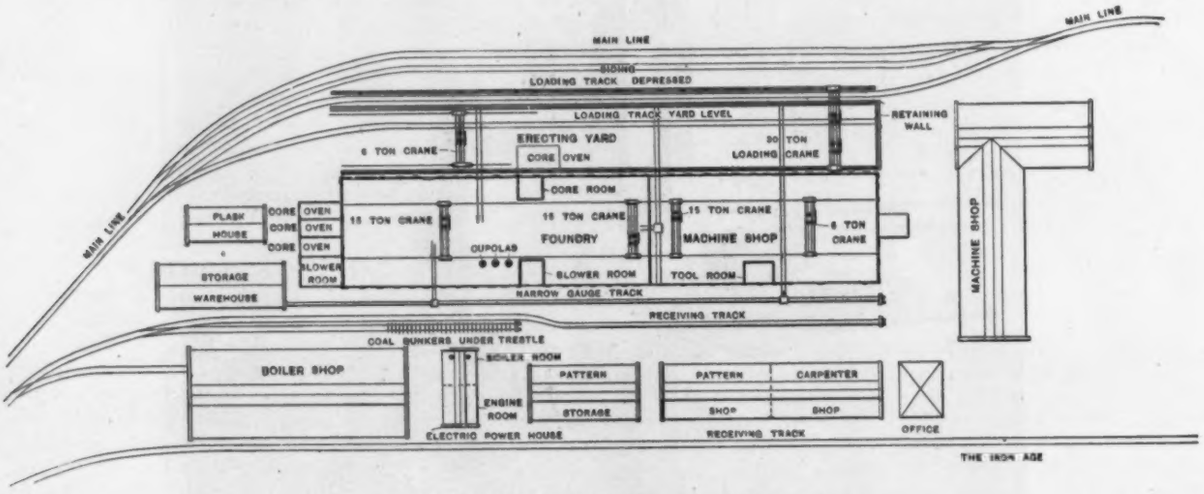
The new plant, as shown in the accompanying ground plan, consists of an office building, carpenter shop, pattern shop, pattern storage house, foundry flask house, storage warehouse, boiler shop, machine shop and power house, besides a large erecting yard.

The trackage arrangement is one of the most important features of the plant. The main line passes through the grounds, and seven side tracks run into the works. There is one track beside the main line, and there are two loading tracks, one of which is depressed below the yard level to bring the floors of the cars even with the ground, while the other is at the yard level. Next between the foundry and pattern shops are two sidings. One of these runs on the general level to bring new material into the foundry yard, while the other ascends a trestle to deliver coal or other fuel into bunkers beneath. Another track runs through the boiler shop. The seventh siding, which is also for receiving material, skirts the outside of the grounds beside the office, carpenter shop, pattern shop, pattern storage shop, boiler shop, electric power house and lumber yard. In addition to these tracks there are narrow gauge tracks within the works which connect the machine shop, foundry, shipping room and storage warehouse, having branches running to the erecting yard and to the sunken track for shipping completed machinery. The branches of the track in the machine shop and foundry reach under the runways of large traveling cranes in the shops, and those leading to the loading tracks run directly under a large crane. This makes it possible to handle mechanically and almost without cost the heaviest piece of machinery from one part of the works to another.

The amount of floor space in the new works is about 100,000 square feet. The main building is 100 x 490 feet, and is divided into a foundry, 100 x 285 feet, and a machine shop, 100 x 205 feet. The pattern storage house is 50 x 100 feet; the pattern shop and carpenter shop, 50 x 200 feet; boiler house, 88 x 200 feet. The company has also practically completed the purchase of the L shaped machine shop, shown at the right of the plan, which is about 75 x 225 and 75 x 75 feet. The foundry is equipped with three large cupolas, one of which is of a size to melt sufficient iron for castings weighing 2½ tons. The foundry is thoroughly modern in its arrangements, and is equipped with two 15-ton electric traveling cranes and other equipment calculated to enable the company to produce from 40 to 50 tons of castings a day. A blower room and core room are within the foundry. Outside of the foundry on the erecting yard side and directly adjoining it is one core oven, and there are three core ovens and a blower room outside at the rear of the main building.

The traveling equipment of the machine shop consists of a 15-ton crane and a 6-ton crane, and both of these cranes cover the width of the main working floors. The machine shop adjoining the foundry has been entirely equipped. It contains several large machines weighing from 75,000 to 100,000 pounds each, such as boring mills, open side planers and large lathes, all of which are accessible to the overhead traveling cranes. The turret lathes and other smaller machines are served by small cranes running above them. The machine shop has a tool room built within it.

The erecting floors adjoin the foundry and machine shop, and over the erecting yard and loading track runs a traveling crane of 30 tons capacity with a 5-ton auxiliary hoist. This crane has a span of 76 feet and a hoist of 30 feet, and its runway is 490 feet long.



The Traylor Mfg. & Construction Company's Plant.

In the boiler shop, which is on the opposite side of the receiving track and coal bunkers from the main building, are the sheet steel and blacksmith departments, and this shop is being equipped with a number of jib cranes and a large double track crane with a 50-foot span, which will be used principally for assembling heavy blast furnace work. On the same side of the main building is the structure containing the pattern shop and carpenter shop, which is now being equipped with a modern selection of wood working tools. The office building is on one side of the pattern shop, while the pattern storage building is on the other.

The power plant, which has already been put in commission, consists of two 204 horse-power water tube boilers, an air compressor and two Corliss engines directly connected to two 100-kw. generators. The current is transmitted to the different parts of the works for operating the machines. The entire plant is operated electrically, including all of the numerous hoists. A compound compressor furnishes air for all the chipping and riveting hammers, and to every part of the works where its use is required.

The general warehouse and storeroom and the flask house are close to each other at one end of the main building, and the detached machine shop is at the other end.

In addition to making a specialty of all classes of mining machinery, the Traylor Mfg. & Construction Company is prepared to manufacture a general line of cement machinery, including an unusually powerful crushing roll to take the place of the ball mills heretofore used for reducing cement making material and similar products fine

enough to pass a 16-mesh screen. The company claims that the reduction in this manner can be accomplished at much less cost than with any other class of machinery. With these rolls to offer in connection with their Centripact screen, the Traylor Company expects to have a large amount of cement making machinery business constantly going through its shops. It has also decided to build tube mills, kilns, sand-lime-brick machinery, stone and rock crushing plants, and, in fact, every kind of pulverizing and screening machinery required throughout the Eastern territory.

For the purpose of undertaking blanket contracts for the equipment of smelting plants and other mining outfits the Traylor Engineering Company has been formed, with offices at 118 Liberty street, New York. It controls all the stock of the Traylor Mfg. & Construction Company, but the two companies will be operated independently of each other. The Traylor Engineering Company, in addition to the general machinery business, acts as consulting metallurgical and mechanical engineer, and has undertaken the designing of what will be some of the largest ore reducing plants in the United States. Samuel W. Traylor is president and treasurer; Bruce W. Traylor, vice-president; Frank W. Hopkins, assistant treasurer, and P. Edwin Van Saun, secretary.

The Eight-Hour Bill Favorably Reported.

WASHINGTON, D. C., June 5, 1906.—A very serious situation with respect to pro-labor legislation in Congress has been precipitated as the result of the wholly unexpected action of the House Committee on Labor, which during the past week reported the new and drastic eight-hour bill without amendments and with a favorable recommendation. The text of this measure was printed in the last issue of *The Iron Age* and constitutes the most extreme form which this proposed legislation has taken in recent years. The bill is now on the House calendar and the leaders of organized labor are making a determined onslaught upon the Committee on Rules with a view to forcing the bill into the parliamentary programme for the few remaining weeks of the current session. The fact that many of the majority members of the House represent close Congressional districts and are now anxiously at work patching up their political fences makes the situation decidedly critical and the outcome will be awaited with interest by manufacturers and employers in all lines of business.

Reported by Minority Members.

The action of the House Committee was the result of an unfortunate series of circumstances. As stated in this correspondence last week, the committee was engaged in a series of hearings, and had already listened to the arguments of representatives of employing interests, while engagements had been made to hear others. At the following meeting of the committee, owing to a misunderstanding, no new witnesses were present, but Judge Payson, representing the Newport News Shipbuilding & Dry Dock Company, was permitted to introduce certain evidence in line with his opening argument. Of the committee there were present Representatives Gardner of New Jersey, Geobel of Ohio and Morris of Nebraska, Republicans, and Hearst of New York, Hunt of Missouri and Rainey of Illinois, Democrats, or one less than a quorum. While Judge Payson was engaged in reading an affidavit Representative Stanley of Kentucky, another Democrat, entered the room and took his seat. Instantly the Democratic members of the committee recognized the fact that there was a quorum present, of which they had control by a majority of one. Mr. Hearst at once objected to Judge Payson's evidence on the ground that it had previously been submitted to the committee and was being presented "for dilatory purposes." Mr. Hunt then moved that the committee go into executive session, which was promptly carried. Once in executive session the Democratic members made short work of the bill. Mr. Goebel, a stalwart opponent of the measure, moved to lay it on the table, but without the formality of a roll call this motion was defeated, whereupon Mr. Hunt moved to report the bill without amendments and with a favorable recommendation. For this motion all the Democrats and Representative Gardner voted, the latter taking the position that as the introducer of the bill he could not vote against it, especially as his negative vote would not serve to defeat the proposed action.

House Leaders Perplexed.

The bill now being out of committee, the House leaders find themselves in a very awkward situation. The action of the Democratic members is reputed to have been taken solely for political effect in the North and East and as the result of a line of policy marked out by the minority leader, Representative Williams of Mississippi. The Labor Committee as a whole is strongly opposed to the eight-hour bill and the constituents of the great majority of Southern Democrats in the House regard the domination of organized labor as fatal to the prosperity and progress of the leading industries of the South. Nevertheless, because the Republican majority had decided to oppose the eight-hour bill the Democratic leaders have concluded that political capital can be made by favoring it—at least until after the elections.

The bill just reported is a far more extreme measure than the so-called Hitt-McComas bill, which was passed by the House and favorably reported by the Senate Committee in the Fifth-seventh Congress. The old measure limited the employment of laborers and mechanics on work being done by a contractor or sub-contractor for the Government to eight hours in any one calendar day, but left the manufacturer free to employ his operatives upon private work for any additional number of hours that might be agreed upon between himself and his employees. Under the pending bill if a man works five minutes on Government work in any one day he cannot thereafter work more than 7 hours and 55 minutes on work of any kind, whether public or private.

Inspector's Judgment Final.

The Hitt-McComas bill provided that a contractor, who might be fined at the rate of $5 per day "for each laborer or mechanic, for each and every calendar day in which he so labors more than eight hours," might appeal from the decision of the inspector to the head of the Department and then to the Court of Claims. Under the new Gardner bill the inspector is not only given arbitrary power to assess the penalties, but is the sole judge regarding exemptions and every other requirement of the proposed law, the head of the Department having authority to remit penalties only in the event that it can be proved that the inspector was in error as to the fact regarding the overtime work.

The exemption in the pending bill, that the eight-hour requirements shall not apply to "such materials as may usually be bought in open market, whether made to conform to particular specification or not," is vigorously criticised as vague and meaningless. If the similitude principle is to apply, it is argued that there is absolutely nothing that cannot "usually be bought in open market," while if the clause is to be strictly construed the law would apply to a very large part of the Government's purchases. It has even been urged that, inasmuch as ships are usually bought in the open market, a battleship would be exempt for the reason that it is merely a vessel "made to conform to particular specifications."

The Committee on Rules is naturally the storm center in the present crisis. The labor leaders, who have been besieging Congress for some months to "do something for labor," are in high feather over the favorable report on the Gardner bill and are anxious to see it passed by the House before adjournment. Manufacturers and other employers are quite as insistent that no action shall be taken and are dwelling with special emphasis upon the contention that the Committee on Rules should not give a place on the parliamentary programme to a measure reported from a leading committee of the House by a "fluke" only, four of the thirteen members of the committee having forced the executive session and but five having voted for the bill. W. L. C.

The Algoma Steel Company, Sault Ste. Marie, Canada, recently turned out 859 tons of 80-pound steel rails in 24 hours, thus beating the record of the Dominion Steel Company, Sidney, Nova Scotia, by 50 tons.

San Francisco Rapidly Rebuilding.

SAN FRANCISCO, May 26, 1906.—San Francisco is fast recovering from the twin shocks of earthquake and fire. On every hand the streets are being cleared of *débris* and the adjacent ground of dangerous walls, brick piles, wires and wreck of all kinds. The street car lines are being started daily, one after another. The trolley is being utilized everywhere, and once more the principal downtown streets are the media of a steadily increasing traffic, with crowds whose numbers begin to remind the spectator of the days before the fire. Such are Market, Kearney, Montgomery, California and Mission streets, while the water front was never half so crowded as it is now. Street cars (the systems centering there), drays, trucks and express wagons form a steady, unintermittent stream, and it takes a pedestrian minutes to get through. And this is all day long.

Everywhere temporary buildings of all descriptions are arising over the burned part of the city. The old locations are being reoccupied by frame buildings generally, many of these being two-story structures, though all are temporary. On Fillmore street especially there are now about 50 new buildings, all started since the fire, either finished or nearly so, and there business men of all descriptions are located. There was a great rush to this street immediately after the fire, and the most extravagant expectations were entertained by owners of property. The parlors of private houses were turned into offices and are still so occupied, while former tenants and owners asked as much as $3000 to $4000 for leases of places that had commanded $60 a month rent and had barely three to four years to run. In some instances extravagant prices were paid for leases, but a sober second thought has come. Van Ness avenue shared with Fillmore street in the wild rush for locations, but there very few buildings have been planned. At this writing about 500 temporary buildings are completed or under construction, and every day 25 to 30 new ones are started. By the time the fall trade opens every merchant who intends to continue in business, and that is 90 out of 100, will be fixed in some sort of a building. The steel and stone and brick structures will follow, and in a year or so all our leading business streets will have assumed something like their old time look.

A great many steel and stone structures have only to be refitted, as a much larger proportion of them can be used again than was at one time supposed, so that this facilitates greatly the revival of business. For instance, on California street, the Kohl Building, the Merchants' Exchange and the New York Mutual Life Building, all within a block of one another, are being fitted up and occupied again. The Fireman's Fund, between the Merchants' Exchange and the Mutual, was about to put up a skyscraper, so that the fire only anticipated the demolition of the building. Directly opposite, the old Bank of California Building had been demolished and the foundations of a new building were being put in. At the junction of Market and Kearney streets the *Chronicle* and *Call* Buildings and the Monadnock offer a similar case, and all over the burned area some skyscrapers stand that need only a little retouching to be as good as ever.

From different quarters, notably from the United States Steel Corporation and from Germany, our builders have been offered all the steel they want and practically their own time to pay. San Francisco will be a good market for structural steel, iron and building hardware for at least three years. It is reported that a leading local hardware house has received orders for all sorts of iron, steel, hardware, &c., aggegating $3,000,000.

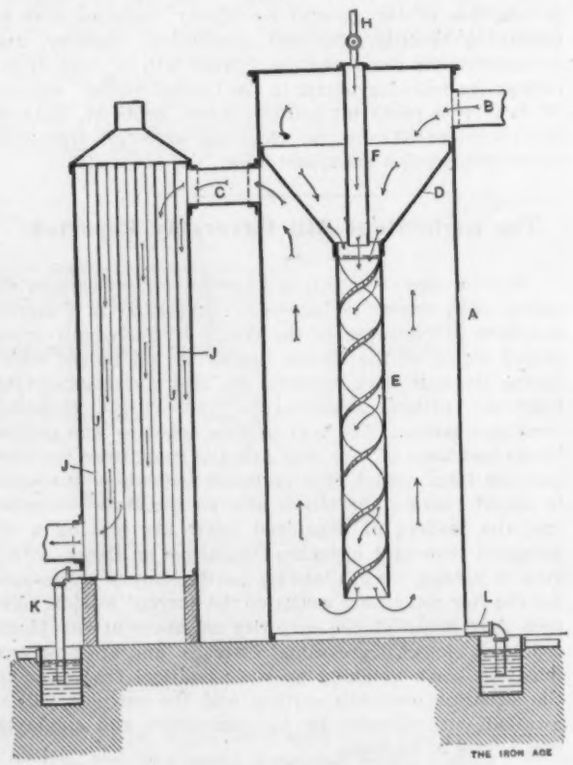
The outlook for the harvest is good, but there are few details as yet, partly because the season is late and partly because the fire and its results are still all absorbing. The good crop prospects do much toward putting every one in better spirits. The banks all opened according to promise on the 23d inst., and all had much more cash than when the fire broke out. Everything goes on in the old-fashioned way and deposits fully equal withdrawals.

J. O. L.

Gas Cleaning by the Use of Steam.

Edward C. Jones of San Francisco, Cal., and S. T. Wellman of Cleveland, Ohio, have been granted a patent on a gas washing apparatus. The invention consists of the mixture of the gas with steam in a vertical tank and later the separation of the steam from the gas by precipitation. The steam combines with the mechanically suspended impurities in the gas and thus permits of their separation from the gas with the steam, leaving the gas quite dry and pure.

Costly centrifugal apparatus is often employed for the elimination of ashes, dust, soot, lampblack, tar and other impurities from furnace or producer gas. Aside from the expense of such apparatus it does not completely remove the impurities. The inventors of the gas purifier shown in section in the illustration provide a tank, A, with a pipe, B, entering near the top, and supplying the gas



A New Gas Cleaning Apparatus.

laden with impurities. At a lower point on the tank is a discharge pipe, C, for the mixture of gas and steam. Between these two pipes an inverted cone, D, is interposed, and from its center the depending tube E extends nearly to the bottom of the tank. The tube F, terminating in the mouth of the pipe E, receives steam through a valved pipe, H. The pipe F being of larger diameter than the steam pipe, the steam expands and issues from the lower end of the pipe F under comparatively low pressure, but with force enough to act as an ejector and to cause a flow of gas from the upper portion of the tank through the pipe E. The pipe is provided with a spiral blade, as shown, so as to cause an intimate mixing of the steam and gas. The mixture of steam and gas passes through the pipe C to an air cooled condenser, through which the steam and gas pass from top to bottom, the air passing upward through a series of internal tubes, J. This condenses the steam, which with the impurities it carries is deposited in the lower portion of the condenser and escapes through a trapped pipe, K. A similar trapped pipe, L, provides for the escape of any water of condensation from the tank.

The Northern Electrical Mfg. Company frequently installs direct current motors for operation in wet locations, where provision has to be made not only for the exclusion of moisture, but of water. This, it is claimed, is successfully accomplished by the Northern design.

The Consumption of Wire Products in the United States.

While full and complete statistics of the production of iron and steel wire rods in the United States are published annually by the American Iron and Steel Association, it is to be regretted that no statistics are collected by any organization of the total annual production of iron and steel wire or of the quantity of wire consumed annually in the manufacture of galvanized wire, barbed wire, field fencing, wire rope, wire cables, wire springs, wire mattresses, wire mats, wire rivets, wire bolts, wire chains, and the various other products of which wire is the raw material. The Bureau of the Census collected and published partial statistics of the value of a number of the products of wire for the census year ending May 31, 1900. While this information does not show the entire ramifications of the wire industry, it does demonstrate its importance, and a very fair idea is given of the magnitude of the various branches covered by the census inquiries. The facts below have been gleaned from the report of 1900 on the manufacturing industries:

	Gross tons.	Values.
Total production of iron and steel wire rods	916,587	$35,529,529
Wire drawn by companies which operated rod mills	579,595	35,283,688
Wire drawn by plants not operating rod mills	Not given.	9,421,238
Consumption of wire:		
Wire nails	329,920	Not given.
Wire work, including wire ropes and cables	Not given.	16,374,629
Mattresses and bed springs	Not given.	18,463,704

The figures show how greatly the value of the wire is enhanced when manufactured into finished products. The wire nails made in the census year (7,390,202 kegs) were probably worth over $22,000,000, as the average monthly price at Chicago from June, 1899, to May, 1900, ranged from $2.60 up to $3.53 per keg. If to the values already given be added those of the barbed wire, field fencing, screens, chains, bolts, rivets, mats, staples, tacks, &c., it will be found that the value of the wire products made in this country during the census year 1900 certainly amounted to over $100,000,000 and may have reached $120,000,000. When the fact is mentioned that the value of all the steel rails rolled in the census year amounted to less than $47,000,000 and the value of the structural shapes to less than $30,000,000, the importance of the industries which manufacture wire into so many useful forms will perhaps be better appreciated.

Estimated Tonnage of Various Wire Products.

Notwithstanding the fact that the details given by the Census Bureau concerning the different wire consuming industries are not at all complete, it is possible for those familiar with our wire drawing industry to estimate quite closely the consumption of wire by some of the leading wire consuming industries. Below will be found a table prepared by a gentleman who has made a close study of the wire drawing business, and especially of the various lines which are large consumers of wire. Taking wire rods as a base, the table gives the approximate tonnage going to the leading wire consuming lines in 1903, 1904 and 1905. The imports and exports of wire rods have not been considered, as in the three years under review the imports exceeded the exports by only a little over 5000 tons. The total shown for each of the years is the actual production of wire rods in the United States in that year. No allowance is made for waste in manufacture, the entire rod tonnage being apportioned to the various finished products:

Estimated Output of Various Wire Products in the United States in Terms of Wire Rods.—Gross Tons.

	Approximate consumption of rods. 1903.	Percentage.	Approximate consumption of rods. 1904.	Percentage.	Approximate consumption of rods. 1905.	Percentage.
Wire nails	430,000	28.7	532,440	31.4	484,593	26.7
Plain wire	242,000	16.0	230,780	13.6	274,595	15.2
Galvanized wire	235,000	15.7	235,000	13.8	276,400	15.3
Barb wire	276,455	18.3	342,000	20.1	314,000	17.4
Field fencing	200,000	13.3	236,292	13.9	300,000	16.6
Miscellaneous wire products	120,000	8.0	122,516	7.2	159,100	8.8
Totals	1,503,455	100.0	1,699,028	100.0	1,808,688	100.0

Comparing the consumption of wire and the wire products above enumerated in 1905 with 1903, a fair gain is shown in wire nails, plain wire, galvanized wire, barbed wire and miscellaneous wire products. The most noticeable gain is, however, in field fencing, in which the increase amounted to 50 per cent. The large increase in 1904 over 1903 in the consumption of wire in the manufacture of nails doubtless accounts for the decreased production of plain wire in 1904. It was also probably the cause of the stationary production of galvanized wire and the very small increase in the production of miscellaneous wire products in the same year. In 1905 the decreased consumption of rods for nail manufacture and for barbed wire, as compared with 1904, is quite marked. So also is the increase in the consumption of rods for plain wire, galvanized wire, miscellaneous wire products and field fencing, especially the latter.

Exports of Wire and Wire Products.

Of the total production of wire nails in 1903 31,453 gross tons, valued at $1,410,105, were exported; in 1904 32,793 tons, valued at $1,599,005, and in 1905 35,836 tons, valued at $1,703,120. Our exports of wire and articles made from wire (which include plain wire, all wire used for fence purposes in the form of wire, whether plain, twisted, barbed or ribboned) amounted to 108,521 tons in 1903, valued at $5,528,726; 118,612 tons in 1904, valued at $5,935,093, and 142,609 tons in 1905, valued at $7,061,442. Unfortunately the Government does not separately report our annual exports of woven wire fencing and wire netting fence, all articles of this character being included in the dragnet classification of "all other manufactures of iron and steel," the total value of which was $9,073,059 in 1903, $10,215,841 in 1904, and $12,617,287 in 1905. It is, therefore, impossible to estimate closely the quantity or the value of the wire and wire products annually consumed in the United States, as our exports of woven wire fencing and wire netting fence probably amount to thousands of tons and millions of dollars annually. C. W.

It appears not at all improbable that the power now running to waste over the great Victoria Falls, on the Zambesi, may at no distant date be partially utilized for the operation of the adjacent sections of the "Cape to Cairo" Railway, the southern end of which has already passed the falls in its progress toward the North. It is intimated that the water going over these immense cataracts represents more than 35,000,000 horse-power continuously applied. With the great improvements going on in connection with the transmission of electric power it is not without the realms of possibility that the next generation may see the entire road operated by power generated in hydraulic units at the Victoria Falls. Assuming an average power required per train at 500 horse-power, an average train speed between terminals of 20 miles per hour and an average of one hour between trains, counting those in both directions, the 7000 miles would call for 350 trains, which in turn would call for the continuous expenditure of 175,000 horse-power, which is only ½ of 1 per cent. of that estimated to be available.

The Forest Service of the Department of Agriculture at Washington has ascertained from returns representing 95 per cent. of the steam railroad mileage of the United States that 80,051,000 wood cross ties were purchased by these roads in 1905. On this basis the total number of ties used by the steam roads in 1905 was 84,400,000, representing nearly 3,000,000,000 feet of lumber, board measure. Reports came from 750 steam railroad companies, having an aggregate trackage of 278,262 miles. Oak ties were 47.5 per cent. of the total, pine 21.9 per cent., cedar 8.7 per cent., chestnut 5.8 per cent. The remaining 16 per cent. was largely fir, cypress and tamarack. Preservative treatment was given to 7,615,000 ties, representing nearly 10 per cent. of the number reported.

The Association of American Portland Cement Manufacturers will hold its quarterly meeting June 11-13, at Atlantic City, N. J. Hotel Brighton is headquarters, but the meetings will be held on the steel pier. A number of interesting papers will be read.

Mexican Railroad and Business Notes.

The General Outlook.

DURANGO, May 30, 1906.—If the activity in the railroad world of Mexico may be taken as an indication of the country's prosperity there is abundant cause for satisfaction, for the various companies have been in a state bordering upon despair for a long time on account of the tax on their freight service. Despite heavy orders placed for additional rolling stock and the receipt by the principal companies of very large accretions to their available supply of cars, they have been entirely unable to meet the demands of the situation. In some instances manufacturing concerns have been obliged seriously to consider the advisability of ceasing operations on account of the difficulty of obtaining fuel, the railroads being unable to supply the necessary cars.

The condition of affairs in railroad circles is well reflected in some remarks made a few days since by Vice-President C. R. Hudson of the Mexican Central Railway Company, who while upon an inspection trip, speaking at Monterey, said:

> We realize how the business has grown in the past year and are working night and day to better transportation facilities. We have placed orders for 1400 new freight cars, the delivery of which will begin next month at the rate of 20 per day. In addition 60 engines are expected to be ordered for delivery next year and 1500 new freight cars. Business for all Mexican roads has stimulated very much since last October, while prior to that time they had more equipment than the business demanded. As soon as it was realized that the stable dollar meant permanent prosperity and increase in business the Mexican Central immediately placed large orders for equipment.

As the present is not the crop moving season this great increase in freight movement can only mean a greater activity among manufacturers and merchants and a more widely spread condition of prosperity among the people.

The rainy season is a little backward. So far a condition of drought exists in the extreme northern States. In the immediate vicinity of Durango the country, except in the rare spots here and there where irrigation is available, is parched and barren and of a most desertlike aspect.

Proposed Export Duty on Zinc Ores.

It was intimated some time ago in one of these articles that a certain class of mining men in this country looked with indifference upon the movement among the Missouri zinc mining interests to increase the duty upon Mexican zinc bearing ores. There now appears to have developed a sentiment in favor of inducing the Government to stop these exports altogether by imposing an export duty upon such ores, the object being to foster the establishment of domestic smelters. No decisive step has been taken yet to secure Government action in the matter.

Railroad Concessions and Construction.

The contract has been let for the extension of the Sierra Madre & Pacific, from Casas Grandes to Temosachic. The road will ultimately be extended to Guaymas, Sonora, connection being made with the Kansas City, Mexico & Orient line at Minaca.

The contract has been closed for the first 80 km. of the projected railroad between Irapuato and Tacambaro, for which A. J. Peyton & Co. hold a concession. Hampson & Smith are the contractors.

A syndicate of Canadian capitalists affiliated with the Mexican Light & Power Company, Limited, has purchased the tramway system of the Mexican Electric Tramway, Limited, of the City of Mexico.

At the close of the coming rainy season the Mexican Central Railroad Company will let the contract for the first 50 km. of the projected short line between the capital and Tampico. The company also intends to construct a line from some point on the Tampico branch to the port of Tuxpan.

The Mexican National Railway Company has taken over the Hidalgo & Northeastern road, recently purchased. This line, it is expected, will also be extended to the Gulf of Tuxpan.

The Mexican Central Railway Company has obtained a concession to construct a line from a point on its Manzanillo extension to the mining districts of Autlan and Mascota, in the State of Jalisco. The line to Autlan will be about 130 km. long and will be undertaken without delay. The concession also gives the company the right to construct branch lines to various neighboring points.

Walter C. Palmer, owner of a mine in the Sombrerete district, in the State of Zacatecas, has obtained a concession to construct a line from the station of Gutierrez, on the Mexican Central's main line, to the mining district in which he is interested, some 125 km. distant.

A concession has been granted by the State of Nuevo Leon to O. O. Howard for a line from Ramones station, on the Matamoros branch of the National Railway, to the Cerralvo lead and zinc mining camps. The road will be narrow gauge and 25 km. must be finished within 18 months. It is reported that capitalists of Pittsburgh will supply the funds for the construction.

The contract for the construction and equipment of the Guadalajara Electric Street Railway, to be built by the Compañia Industrial de Guadalajara, has been let to E. Schondube of the City of Mexico.

The Mexican Central Railway Company is making rapid progress in construction on its Paredon-Saltillo extension, which will, it is believed, be ready for operation within a few months.

Industrial Notes.

Possible purchasers of tubing may be found among the following list of individuals who have made applications for water concessions for irrigation and other purposes:

Celedoneo Corvera, president of the Union Calico & Cloth Factory, district of Mazatlan, Sinaloa, for 5000 liters per second from the River Presidio; Antonio Omaña, 4000 liters per second from the Tula River, State of Hidalgo; J. A. Certucha, in behalf of the Compañia Industrial de Paso del Rio, to use the waters of the River Armeria, State of Colima. For power, Indalencio Treviño asks permission to use the waters of the Rio Escondido, State of Coahuila; he also intends to construct a reservoir. Francisco Martinez Arauna desires to use the waters of the Tepeji River, in the State of Hidalgo, to furnish power for a cotton factory and for light and power for the town of Tula.

Large orders for new rolling stock, comprising box, stock, flat and coal cars, have been placed in the United States recently by the Interoceanic Railway Company, an affiliation of the merger system.

The National Railway Company recently ordered from the Baldwin Locomotive Works 25 freight and 10 passenger engines and from the American Locomotive Company five passenger engines.

E. H. Barton and W. S. Doble have formed a partnership for the purpose of establishing an iron and brass foundry in Torreon, Coahuila. A specialty will be made of the manufacture of iron and brass bedsteads.

According to reports in the local press extensive improvements are being made in the Monterey steel plant. These, it is said, will much increase the productive capacity, and will include the substitution of Bessemer converters for the open hearth system of steel making hitherto used.

J. J. D.

The president of the New York Produce Exchange, in his report made at the annual meeting of that institution, held May 29, referred as follows to the trade in pig iron warrants: "While the pig iron trade has not grown as rapidly as expected, yet we believe it is due more to the peculiar conditions in the iron trade than to lack of appreciation of the facilities offered. When the supply of pig iron exceeds the demand conditions may prevail which will bring trading in this important commodity on our floor into popular favor among the iron trade investors."

The report of the mineral production of New York in 1905, as made by D. H. Newland, assistant State geologist, shows a production of 827,049 gross tons of iron ore valued at $2,192,689, 3,897,616 pounds of graphite valued at $142,948, limestone valued at $2,411,456, 10,100 gross tons of pyrite valued at $40,465, 191,860 net tons of gypsum valued at $551,193, 949,511 barrels of petroleum valued at $1,566,931. The total value of all mineral products is put at $34,663,553, an increase of $6,896,648 over the total valuation of 1904.

Three Million Tons from One Mine.

Record Shipments from the Mountain Iron in 1906.

DULUTH, MINN., June 2, 1906.—Iron ore shipments this year from the Mountain Iron mine on the Mesaba range will aggregate 3,000,000 tons. This is half a million ahead of its own best record, that for 1905, and far ahead of anything else ever known in the history of mining. This means an average daily product for the shipping season of 15,000 gross tons, providing there is no delay from floods, accidents or difficulties of other kinds. The Mountain iron is the largest open pit of the Oliver Iron Mining Company, and last winter it was considerably widened and enlarged to permit the freer movement of cars in train within the pit. This mine has shipped more than 1,000,000 tons for each of the past seven years, an average of 1,376,000 tons per year. It was the first shipper on the Mesaba, and to the close of 1906 will have forwarded 15,250,000 tons in 14 years. This season's product will load six or seven trains per day. The property was the first in the Mesaba district to be acquired by the Carnegie interests, in 1896.

Other tremendous shippers for this year off the Mesaba range will be the Burt, with nearly 2,500,000 tons; the Fayal and Adams, with nearly 2,000,000 tons each; the Morris, Stevenson, Mahoning, Lake Superior and Biwabik, each with more than 1,000,000 tons. Total shipments from the range can be very closely forecasted now. The Duluth, Missabe & Northern road will move 11,200,000 tons, the Duluth & Iron Range 8,000,000 tons, and the Great Northern 6,000,000 tons, making a total for Minnesota of 25,000,000 tons. Of this all but about 2,000,000 tons will come from the Mesaba. The Oliver Iron Mining Company from the Hibbing district alone will move forward in the coming six months not less than 7,000,000 tons. The Duluth, Missabe & Northern road is now reaping the advantage of heavy equipment orders placed during the past two years. For one day this week the road moved ore over its road and docks at the rate of over a ton a second, or 70 tons per minute the entire 24 hours. The road expects to forward ore during the hight of this season at the rate of 2,000,000 tons per month, which has never been approached in the history of the trade.

Overhead Grab Bucket for Shipping.

The Hoover & Mason grab overhead stripping system, installed at the Grant mine, has been tried a few times the past week or two, and seems to be coming along. At the early trials it refused to work, by reason of some failure in the counterbalance, but this has been remedied. It is not yet operating steadily, however, and may not for some little time. The machine is very much of an innovation and may take considerable trying out before it is perfected.

At the new Mayas mine, on the east end of the range, the importance of small deposits well located and of good grade has been once more demonstrated. This property was explored two years ago by a heavy operator, but the tonnage did not appear large enough to bother with. The mine was again leased a short time ago, and the surface stripped for open cut mining. It was found that the ore could be taken out by dropping it down a short chute to cars on the railroad track at the base of the shallow deposit, and the mine operation is now going on without the use of steam, either for hoisting, shoveling or pumping, and at the rate of about 23 tons per day per man employed. As the preliminary stripping was light and uncovered about three tons of ore to each ton of surface removed the cost of getting this ore on cars is very light, and the profits on the 200,000 or 250,000 tons that may be mined here are large. The ore is of excellent grade and quite desirable in structure.

The Pittsburgh Iron Mining Company is opening its Wacouta mine, just east of Mountain Iron, and will strip it to the extent of perhaps $200,000. There is a considerable body of good ore on the land.

Harrisburg and Buffalo Companies on the Mesaba.

The Blue Ore Mining Company has sold a tract of ore land adjoining the Mesaba Chief and St. Paul mines, in section 23-56-23, for a royalty of 40 cents a ton and an annual minimum of 100,000 tons, to the Central Iron and Steel Company of Harrisburg, Pa. The mine will not be opened at present, but will await the possibility of a new Mesaba range railroad, the construction of which is well assured, according to reports. The mine contains, so far as explored, nearly 5,000,000 tons of merchantable ore, running from 55 to 67 per cent., and 1,180,000 tons of it is Bessemer grade. M. W. Macdonald of Duluth is owner of the Blue Ore Mining Company and explored the tract in 1903.

The New York State Steel Company of Buffalo, N. Y., has taken an option on the southwestern of the northeastern, a State tract in section 10-58-18, and has one drill working there. This is east of the Iroquois and Brunt mines and south of the Wacouta. The company, it is stated, will require a considerable annual tonnage of Mesaba ores and seems desirous of carrying on exploration work in the district.

Exploration will be carried on at the mouth of the Prairie River, four miles east of Grand Rapids, in the southeastern corner of T 55-25. It is about four miles south of the range, as originally platted, but they seem to look for iron ore anywhere now, and it may be there also. Explorations on the west side of the Mississippi, near Grand Rapids, are going on steadily and some reports of finds are made.

Concentrating machinery of the old Pewabic mill has finally started up after an idleness of six years. About 50 men are employed at mine and mill, and this number will be somewhat increased later in the season.

The entire old stock pile at the Champion mine, Marquette range, accumulated there from previous ownership, will be shipped this season and the mine will be reopened for active operation. The Champion has been shut down since its purchase by the Oliver Iron Mining Company, and the little village has become almost deserted. At Volunteer mine, near Palmer, about one-third of the 75,000 tons in stock will be moved to furnaces, but the mine will probably not be opened this season.

Ladenburg, Thalmann & Co., owners of the Florence mine, have organized a new company to operate it and handle as well the large mineral land interests of that banking firm in old ranges of Michigan and Wisconsin. Extensive exploration will be undertaken soon on some of these lands.

D. E. W.

Texas Foundrymen Object to Penitentiary Competition.—A committee representing the Texas State Foundrymen's Association recently appeared before the Texas Board of State Penitentiary Commissioners and made formal protest against the manufacture of certain iron products at the State iron foundry at the Rusk penitentiary. The grounds for the complaint were that these products come into competition with the products of private iron foundries of the State, to the detriment of the business of the latter. The principal objection was directed against the manufacture of sad irons by the State rather than against the manufacture of iron pipe. The attitude of the foundrymen is conciliatory and seeks a peaceable removal of the discouraging competition which has prevailed by encouraging the manufacture at the State penitentiary of commodities which will not compete with the present established industries. The penitentiary officials have proposed that if the Texas foundries purchase their pig iron of the State furnaces the former would refrain from making castings competing with the foundrymen. A general discussion of the matter has been held, but without definite action being taken as yet. The daily output of the State furnace is 100 tons, of which 40 or 50 tons are used in the manufacture of iron pipe by the State.

One usually associates a lighthouse with a rocky shore and waves dashing high upon it, or a tiny islet out at sea, where a beacon is planted to warn mariners of danger. Out on the Arizona desert, however, says the *Bulletin* of the New York Edison Company, is a lighthouse which beckons the wayfarer to a spot where he can find the life giving water in the midst of his journey over the parching desert. Water pure and fresh flows from a well at the point where the lighthouse stands.

THE IRON AGE

1855—1906.

New York, Thursday, June 7, 1906.

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GEO. W. COPE, ... }
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The Growth of the Structural Steel Trade.

The statement was made in reviews of building operations in the United States in 1905 that the record had never been approached. Ample confirmation is given in the statistics of structural steel production for last year. The remarkable total of 1,660,519 gross tons of structural shapes in that year is shown by the figures, or an increase of 74.9 per cent. from the total of 1904, which was 949,146 tons. From the highest previous total, 1,300,326 tons in 1902, the increase last year was 28 per cent. While the valuation of the new buildings undertaken last year was commented on at the beginning of this year as noteworthy, the statistics for 26 cities showing a 40 per cent. greater total than for 1904, it will be noticed that the percentage of gain in output of structural shapes was nearly twice as great. It is to be considered, moreover, in judging of the splendid proportions to which the use of structural shapes has come in this country, that the production figures do not include plates or plate girders, a large tonnage of which is employed in the construction work commonly credited to the structural mills. In the foreign trade for 1905 the balance was in our favor, exports of structural shapes amounting to 83,193 tons and imports to 16,147 tons.

The development of the structural steel industry has been in comparatively few hands. For a number of years after the trade began to assume prominence the Eastern mills were the leading factors, and their main competition was from across the water. Then Pittsburgh came rapidly to the front, and it was the starting of the new Homestead mill in early 1892 that had most to do with the breaking of the beam pool and the immediate dropping of the price from 3.10 cents, which the pool had long maintained, to 2.50 cents. From 1892 the supremacy passed to the Central West, and shipbuilding, the steel cage construction of the modern skyscraper and the large tonnage of angles entering into railroad bridge work in districts tributary to Central Western mills have kept them in the lead as to tonnage ever since.

Mr. Carnegie used to say that it was "a business of infinite detail," and partly for that reason and partly from the prominence of its engineering side and the technical reinforcement required by the ordinary sales organization, there was no disposition to rush into it. Doubtless the establishment of connected fabricating works by the leading producer had something to do with the subsequent concentration of the business. At all events, while there were 11 works in the beam pool that was dissolved in 1892 and four outside, the membership of structural associations of more recent years which have included all works has been only half the total number in the early nineties. But even with the lessening in the number of plants that was noticed in the nineties; competition at times was keen, and before the iron trade emerged from the depression ending with 1898 a cent a pound, and in some cases considerably under, became the basis of important contracts in the Central West.

The lack of structural mill capacity has been a marked feature of the iron situation for several years, with the single exception of 1904. But while relief has been long in coming, the past year has brought reinforcement that promises to be equal to all the necessities of the trade. The production record for 1905 was made without any appreciable contribution from a number of new mills. The mill at Buffalo did not come into operation until the spring of 1905, and naturally did not reach full efficiency for some time. The new Clairton mill, with annual capacity of 100,000 tons, and the South Chicago mill, with capacity of 150,000 tons, only became active late in the year. The Passaic mill was shut down for a considerable period, though now running full. The Pottsville mill, the new Jones & Laughlin Steel Company mill, and the Staten Island mill, which latter will be running by October, with an annual capacity of 136,000 tons, will all be new contributors to the production of 1906, while at Johnstown, Pa., new capacity is being provided that will be active in the second half of the year. It is quite evident, therefore, that an output of 2,000,000 tons of structural shapes can be reached in 1906, and that in 1907 this figure can be readily exceeded. As a matter of comparison it is interesting to note that in 1892, the first year in which the production of structural shapes was separately ascertained, the total was 453,957 tons, falling to 387,307 tons in 1893 and 360,305 tons in 1894. For the eight years preceding 1900 the average annual production was 543,928 tons, or less than one-third the total for last year. When it is stated that 200,000 tons of shapes were erected in Greater New York alone last year and that this total is quite certain to be increased to 300,000 tons for 1906, it may be concluded that the limit of expansion is not immediately at hand.

The Perpetuation of Machine Tool Associations.

Associations are so new in the machine tool trade that their action is being widely discussed. The principal argument that is heard against the expediency of advancing prices by agreement on machine tools, as well as on other classes of product, is that when the demand falls off there will come a greater and more demoralizing cutting of prices in the rush for what business may be left in the market. In considering this question it is necessary to divide trade associations into two classes, namely, those which act in unison in establishing prices, whether the market is rising or falling, and those which act only to advance prices, permitting the members to do their own reducing of schedules when times get dull. The former class of associations usually has a business agreement which is in the nature of a formal contract. In the latter class the members, apparently by mutual consent, permit agreements to go by the board when the demand begins to fall off. With them mutual protection of interests ends when in reality it is most needed.

When business begins to expand, a loosely constructed association, recognizing—perhaps anticipating—the rising market, gets together and advances prices, taking as a basis an agreed-to schedule. Perhaps conditions may warrant further advances. But when conditions change and the demand falls off and established prices are difficult to obtain concerted association action is succeeded by every man making his own price. Customers recognize this and begin to shop around, quoting one manufacturer or dealer against another, until prices approach and even run below cost. Naturally some feeling is engendered, though this feeling has hardly the bitterness which prevails where no association exists, because of the personal and even friendly side of its intercourse between men of the same line of business, who meet one another at association meetings. But it exists, neverthe-

less, and if a genuine depression were eventually reached, through some unfortunate combination of circumstances, the existence of an association might be seriously threatened and its usefulness ended, so that when prosperity came again its favorable influence in its trade would not be felt.

A well organized association is a beneficial factor in any line of business. It is not that it unduly inflates prices, but that it enables the members to take advantage of a market. This is not only true in good times but applies as well in bad times. In a scramble for business prices go very low. If, instead, a reduced schedule of prices went into effect, to be adhered to, there would be just as much business in the aggregate; each member of the association would probably have as large a share as he would get by going it alone, and he would get more money for what he sold. It is surely just as important to the manufacturer to get a fair price in a time of depression as in good times. When he is struggling to make both ends meet and keep his works running every dollar counts. He cannot afford to do business at a loss, and when a trade is working at odds between its members it often happens that the man who is receiving the most orders is running behind more rapidly than his competitors who are getting better prices and taking less business.

It has been frequently said in trade circles that there would be no use in meeting to reduce prices, because the members would have begun cutting before they could be brought together. This would seem to be an entirely unnecessary condition of affairs. Even if there had been some cutting a meeting of an association to discuss conditions and formally put prices at the mark where they should be with business going down could do good only. With materials and wages lower, cost of production should be lower. With a decreasing demand manufacturers would be content with a smaller percentage of profit. By the time an association had concluded its deliberations under these conditions prices would have been reduced materially, but the decrease would be uniform. If there were cutting beyond the agreed figures it would probably be less serious. A discussion of what association methods should be in dull times is, strictly speaking, far from timely, for, fortunately, everything points to a prolonged continuation of present exceedingly agreeable conditions. Yet it is good from a business standpoint to prepare for contingencies, even though they may be remote, and a discussion of such a question during a period of harmonious unity in a trade may mean that the association will be ready to act quickly and intelligently, if the time should come, to forestall a lack of co-operation among its members. If association work is to be successfully carried out, everything possible must be done to insure co-operation under all conditions of business, else disruption, more or less complete, may follow.

Alcohol vs. Gasoline in Explosive Engines.

Alcohol can be obtained from any saccharine solution that has undergone fermentation and by repeated rectification can be concentrated until it contains only about 10 per cent. of water; further purification would not be commercially demanded. The substances from which it may be derived are practically universally distributed and in limitless quantities. The machinery necessary for its manufacture is inexpensive and of the simplest character. Operating expenses are small, as the labor bill is insignificant, and the principal item is for heat and for the still. Experts calculate that under present conditions alcohol can be manufactured for less than 10 cents per gallon. If this should prove to be true there is no reason, with the internal revenue tax removed, why it should not be placed on the market at retail at a much less price than is now asked for gasoline, 18 to 22 cents per gallon.

In heat values gasoline possesses marked superiority, having 18,000 heat units to the pound, as against about one-fifth less for alcohol. But even with this advantage the horse-power output of two engines exactly alike, one using gasoline and the other alcohol, is about the same. This seeming anomaly may be rudely accounted for by the statement that in the latter the heat units are better arranged or disposed for utilization in the engine. To state it another way, the efficiency of combustion is greater with alcohol than with gasoline. Under these circumstances the cost per horse-power, the two liquids being the same price, is the same.

Tests made with a Nash engine, first using gasoline and then alcohol, gave remarkably close results, in both cases the output being 1 horse-power for about 1 pint of combustible. As this test was made with an engine designed particularly for gasoline the alcohol was handicapped and of course did not give as good results as it would have in an engine constructed for its own use.

The most important change that will be required to adapt the engine to the best service under alcohol will be in the cylinder and its intermediate parts. Other things being equal, the essential factor in determining the economy and efficiency of an explosive engine is the extent of compression that is possible with the mixture of vapor and air. This is greatly in favor of alcohol, since the compression can be carried much higher than with gasoline without danger of premature explosion. The same rule obtains here as in other explosives; gun cotton is a comparatively harmless substance until closely confined. Compression in a gasoline engine ranges from 45 to 60 pounds per square inch, varying according to the design and the rapidity of the cooling of the cylinder. A higher compression being possible with an alcohol mixture, the combustion is more perfect and the energy greater with equal volumes of gas.

In all gas engines, except those of the throttling type, the cylinder is completely filled with the mixture during the stroke just preceding ignition. If the clearance were as small as in the ordinary steam engine the heat due to compression would be so great as to cause inflammation of the gas before the piston had reached the end of its stroke. To overcome this the common gasoline engine is made with a clearance equal to one-fourth to one-fifth of the volume of the cylinder. This clearance will have to be reduced to meet the requirements of an alcohol mixture and obtain a higher compression before ignition by the spark takes place. In this country engines have not been designed for the use of alcohol, neither have endeavors been made to modify the ordinary engines for that purpose. The price of alcohol has been so excessive as to discourage and in fact prohibit its employment as a fuel for power purposes. There has been absolutely no incentive along that line. But much work has been done in this direction in Germany and France, where alcohol is cheap and engines using it are common.

The few tests that have been made in this country have thus far not been with the serious intention of using alcohol in every day service; they have been more in the nature of laboratory experiments. But conditions will be changed by the removal of the tax, and from now on engine builders will be busy with new designs; in fact, many have already begun the thorough study of the subject. No alterations will be required in the hit-and-miss and throttling types of valve. The former will as now admit a charge to the cylinder only when the governor

demands it, and the latter will control the quantity of mixture admitted as it does now. But under certain conditions of operation new construction will be necessary in the carburetting chamber. Alcohol does not vaporize as easily nor at as low a temperature as gasoline. In order to obtain a proper mixture the liquid will have to be heated in some cases.

Independent of economic considerations alcohol possesses two special advantages over gasoline for use in an explosive engine—it is safe and odorless. Once widely distributed and placed beside gasoline in cost it will speedily make a place for itself for stationary work and automobile use, the engine being the only field with which we are at present concerned.

Customs Contentions.

The Steel Wool Case.

The Board of United States General Appraisers has completed the taking of testimony in the second test case to be brought to determine the dutiable classification of so-called steel wool. The subject of the present litigation was imported by the Buehne Steel Wool Company, New York. Final briefs by counsel have been filed and it is expected that the board will formulate a decision shortly. Various claims are made by the importers for lower duty, the chief contention being that the merchandise is dutiable, under paragraph 137 of the tariff law, as round wire or steel wire worth less than 4 cents per pound, at 1¼ cents per pound, 1½ cents per pound or 2 cents per pound. Another claim is to the effect that the wool is dutiable under paragraph 137 of the tariff laws, as round wire or thereby at the rate or rates applicable to it under that paragraph, according to its value per pound.

In a final brief filed with the customs tribunal by John A. Kemp, counsel for the Treasury Department, it is submitted that the importers' protests should be overruled and the merchandise deemed dutiable as assessed at the rate of 45 cents, under the provision in the law for manufactures of metal. The brief says that it is not believed that the importers are serious in their contention for assessment under paragraph 137, and that consequently the Government's argument will be confined to the claim that the merchandise is dutiable under paragraph 135. When seen by a reporter for *The Iron Age* the Treasury counsel stated that the Government considered the steel wool issue as one of the most important now pending, owing to the principle involved in the final determination of the case. According to the attorney, the Government will exert every effort to have the Board of Appraisers and the courts decide that the steel wool is properly dutiable at 45 per cent. Mr. Kemp said that if it should be decided that steel wool does not come within the purview of the provision for manufactures of metal the door will be opened for lower classification on many other lines now included at the 45 per cent. rate. In this way the revenues of the Government would be seriously affected, while domestic producers of foreign competing merchandise would also suffer. Owing to these circumstances the Treasury Department proposes to conduct a stubborn campaign to maintain the existing classification. In addition to the brief submitted by the Government counsel, arguments have been filed in behalf of the importers and the domestic interests. Among those recently appearing before the Board of Appraisers as Government witnesses were John C. Neil, structural engineer Carnegie Steel Company; George E. Thackery, structural engineer Cambria Steel Company; H. J. Shotter, superintendent City Mills of the Carnegie company; Channing Whitaker of the Lowell machine shop; Chester M. Spare of the Phœnix Iron Company, and James Worth, manufacturer of boiler plates, at Coatesville, Pa.

Tin Scrap Is Not Tin Plate.

In a decision by the Board of United States General Appraisers, promulgated May 31, it was held that tin scrap cannot be regarded as tin plate for purposes of customs assessment. The merchandise the subject of the protest was imported by the Syracuse Smelting Works. When the merchandise reached New York the collector of customs classified the importation as "tin plate strips as tin plate," with duty at the rate of 1½ cents per pound. The importers maintained that the entry should be deemed scrap tin, with a tax at the rate of 10 per cent. In sustaining the contention of the importers, General Appraiser Fischer, in his decision for the general board, says in part: "We find from the uncontradicted testimony taken in this case that the importation consisted of tin scrap in pieces of irregular shape; that included in the scrap were a small quantity of strips and also a small quantity of disks; that the presence of a few disks and strips is not unusual, the offal of tinware factories being bought as it is found. It would be impracticable to separate the insignificant quantity of strips and disks from the rest of the mass. We hold that the merchandise is not dutiable as tin plate, but falls within the terms of paragraph 463 as waste not specially provided for. The protest is sustained and the decision of the collector reversed."

Antimonial Lead.

On May 31 the general board overruled a claim filed by the American Metal Company, New York, it being held that the custom authorities were correct in imposing duty on so-called antimonial lead at the rate of 2⅛ cents per pound under the provisions of paragraph 182 of the tariff act. It was alleged by the importers that the merchandise is type metal containing 9 per cent. or more of antimony, dutiable at 1½ cents per pound on the lead contained therein, under the provision of paragraph 190.

Metal Calendars.

On June 2 the lower customs tribunal denied claims filed by C. B. Richard & Co., and Calhoun, Robbins & Co., New York, regarding the classification of metal calendars of various kinds. The merchandise consisted of memorandum pads with metal covers, metal being the material of chief value. Duty was assessed on the goods at the rate of 45 per cent., under the provision for manufactures of metal. Objection was taken to this return, the merchandise being claimed dutiable at 25 per cent. and at lower specified rates. No evidence was submitted by the importers calculated to influence the board to order a reversal of the collector's assessment.

Solder Dross.

The board has settled a dispute between the Government and Kahn Bros., New York, concerning the assessment to be imposed on merchandise returned by the appraiser as "solder dross as lead dross." Duty was demanded on the basis of 2⅛ cents per pound, under the provision for lead dross. The only claim in the protest is that "the duty should be assessed only on the lead contained therein." In overruling the contention the board says that no provision of law is cited in support of the importers' claim, and that the board knows of none. "If the merchandise, which contains, respectively, 20.40 per cent. and 32.21 per cent. of lead, is lead dross, it is clearly dutiable as assessed. If it is tin dross, as it was invoiced, and as the testimony taken at the hearing would seem to indicate, it is free of duty, under paragraph 683, a claim not made in the protest. The protest is overruled and the decision of the collector will stand."

Some idea of the dimensions of the largest paper making machine ever constructed in the United Kingdom may be had from the fact that it fills a shed 185 feet long. It has great width, due to the fact that the Swedish Paper Mill Company, for whom it was built, intends to use it for the production of two 75-inch sheets of paper, a total width of 150 inches, or 12½ feet. The paper is to be run through the machine at the high speed of 500 feet per minute, which calls for very heavy and accurate driving gear and large rolls. To provide paper of a superior finish a stack of calendar rolls is fitted, weighing 70 tons, the lowest one alone accounting for nearly 15 tons. The entire machine weighs 550 tons, and is driven by a 200 horse-power steam engine. The machine was built in Edinburgh, and conveyed to Sweden in a special steamer chartered for the purpose.

The Electric Crane in the Foundry.*

BY HARRY SAWYER, MUSKEGON, MICH.

It is not the purpose of this paper to enter into a technical discussion of electric cranes, but such a presentation of the subject as will lead to a better understanding between makers and users cannot fail to be mutually profitable.

The use of the electric crane in the foundry doing heavy work has become so general that even a reference to the older methods, by way of comparison, seems uncalled for. It may be interesting, as a bit of history, to note that the first three-motor electric traveling crane built in the United States, and probably in the world, was for use in a foundry. It was put in operation only a little over 17 years ago. Although it was constructed from the wreck of an old rope driven crane, it did good service night and day for nearly ten years. It was the invention of Alton J. Shaw, then employed by the E. P. Allis Company as a designer, and was used in the foundry of the company's Reliance works at Milwaukee.

There have been some interesting phases in the development and introduction of the electric crane. The skepticism of those in need of such machines and the opposition of those engaged in the manufacture of the earlier types were to be expected; but it is only fair to say that the users of cranes were quicker to recognize the advantages of the new type and to adopt it than were the makers of the old. The use of the electric motor and the sliding contacts solved in so satisfactory a way the problem of transmitting power to a moving machine that the traveling crane rapidly superseded the swinging crane in nearly all classes of foundry work where a crane is required. In one notable instance—pipe foundry work—the swinging crane was retained. Whether this was due to some peculiarity of the work that made the circular pit and the circular movement essentially better than the rectangular pit and corresponding crane movements, or whether it was due to the natural persistency of established practices seemed for a time to be an open question; but the recent equipment of several pipe foundries with traveling cranes indicates that the latter was the correct explanation.

The Foundry Sets the Standard.

It is no doubt true that the foundry has set the standard of excellence for electric cranes. Some shops and mills may have heavier loads to handle and require greater speed, but the crane manufacturer recognizes that the perfect control required in the foundry represents a higher state of development than mere requirements of capacity and speed. It should not be understood that good control is not required in mills and shops, particularly in the latter, but as a rule the requirements of the foundry are much more exacting.

The conditions under which a foundry crane is operated are less favorable to continued good service than the conditions in a machine shop. It is more subject to overload, and the dirt and dust necessitate more careful attention. Furthermore, the men directly responsible are usually less familiar with machinery, with the result that the crane too often does not have the care it should. It is a mistake to assume that a crane which does the work of an army of laborers can safely be handled and cared for by one of that class. The importance of employing only thoroughly competent and conscientious operators and keeping the cranes in perfect repair cannot be too strongly urged. Prompt attention will reduce the total cost of repairs and the extra cost of careful and competent men will be saved many times by the more constant service and longer life of the crane.

The Demand for Excessive Speeds.

There is at the present time something of a demand for excessively high speeds, and the motives of the manufacturers who advise against them are sometimes misunderstood. It is not that the problem presents any difficulties from the manufacturer's standpoint. He may prefer to furnish a standard article, from considerations of cost and delivery, but oftener he is considering the direct benefit to the customer and the indirect benefit to himself. The manufacturer and user may recognize the same advantages and disadvantages, but from their different standpoints they do not see them in the same proportion.

The one advantage sought in high speeds is a saving of time, but this is often overestimated. Take, for example, a 10-ton crane with full load speed of 20 feet per minute. We may assume that the average load will not be more than one or two tons, that the average speed for such load will be 30 feet per minute, and that the average lift is 5 feet. Allowing 50 per cent. more time for acceleration from a state of rest, we find the time for an average lift to be 15 seconds.

If the speed of hoist were doubled it would at first appear that one-half of this time, or 7½ seconds, would be saved. If 20 lifts were made per hour, the result would be a saving of only about 4 per cent. of the time. When it is remembered that many of the lifts must be very slow, regardless of what the crane is capable of doing, and that traverse movements are usually started as soon as the load is clear of surrounding objects and before the hoist movement is stopped, the actual saving is reduced to a very inconsiderable amount of time.

Where a large floor area is covered a greater saving can be made by increasing speeds of horizontal movements, but the swaying of load which results from high speeds and sudden starting and stopping sets a limit to the saving that can be made in this direction.

Two objections may be offered to excessively high speeds. First, the accidents that are likely to result from putting a high speed crane in the hands of an incompetent operator often cause the loss of much more time than is saved by the higher speeds, and greatly increase the cost of repairs. Second, if the crane is not usually run at full speed there is a constant loss of power in the rheostat, and unnecessary wear and tear on the controller parts, both of which cause expense and loss of time. The above comparisons apply with the most force to cranes in foundries, and with least force to cranes in mills, where much higher speeds are necessary and practical.

Control of Hoisting Mechanism.

Next to the requirement of necessary strength in all parts for absolute safety, the most important point to be considered is perfect control of the hoisting mechanism. This depends upon three parts: the motor brake, the load brake, and the controller. The motor brake is released by the current which operates the motor, and should require only as much current as is necessary to drive the machinery without load. It should be sufficiently powerful to bring the armature to a stop promptly, but without shock, when the current is interrupted.

The load brake is a far more important part. It must allow the machinery to run freely in hoisting, but prevent the load from descending, except when the motor is run in the lowering direction. In most if not all forms of load brakes now in use the brake is applied by the action of the load. They may be divided into two classes: one in which the brake pressure is not reduced in lowering, but the motor acts with the load to cause the brake to slip, and the other in which torsion of the motor in the lowering direction reduces the pressure between the surfaces, allowing the brake to slip and the load to descend. The most common of the first class is the enlarged step bearing on a worm shaft. It can be used only in connection with worm gearing. It is a very simple and may be made a very satisfactory working brake. The most serious objection to it is this: If proportioned to give a fair margin of safety with the best conditions of lubrication, it will take considerable power to lower with moderate or poor lubrication, for the motor must overcome any excess of holding power over that necessary to sustain the load. This extra work in lowering means loss of time and power and greater wear of parts.

Of the second class there are the coil type and the disk type. Both have their advantages and disadvantages. The disk type is more substantial in construction, gives better distribution of pressure over the friction surfaces, and consequently a much lower unit pressure; and as the pressure is strictly in proportion to the load it gives

* Read at the Cleveland Convention of the American Foundrymen's Association, June 5-7, 1906.

higher speeds in lowering light loads. It has this disadvantage, that it is more sensitive to irregularities in lubrication.

In the coil brake the pressure and wear are concentrated principally at one end. While the brake is applied by the action of the load, the pressure and resistance to slipping are not strictly in proportion to the load. The torsional effort of the motor to release the brake is dependent upon the proportions of the brake parts and not upon the load, hence the speed in lowering is approximately the same for all loads. Both types are used by reputable builders and both may be designed to give good results.

A good controller is indispensable to a satisfactory crane. The essential parts of the controller are the resistances and the means for varying the amount of resistance in the circuit according to the speed and power required. The most common practice is to divide the resistance into sections, connect the sections together in series and connect each section to one of a series of corresponding contacts. A brush is arranged to pass over these contacts, cutting more or less of the resistance into or out of the circuit. Various materials may be employed and details used to obtain the desired result, but certain conditions must be complied with if satisfactory results are to be secured.

The total resistance may be sufficient to allow the passage of only enough current to start the motor at a very slow speed with its smallest load. The number of sections must be sufficiently great and the resistance of these sections sufficiently small so that no sudden or abrupt changes of speed will occur from the time the first contact is closed, sending the current through the resistance, to the time that all the resistance is cut out, and the motor is given full current.

Durability of the controller and convenience in making repairs are important considerations. The construction should be such that neither the resistance material nor the supporting insulation will be injured by the heat. Conservative rating and good ventilation are required to keep the temperature down to a safe point. Sparking and burning of contacts cannot be entirely prevented, but proper proportion of resistance to avoid great changes in voltage between consecutive steps and a well designed magnetic blowout will prevent serious burning. The brushes and contact pieces must be renewed occasionally and they should be very accessible. It is important also that the resistance material should be removable without moving the controllers from their positions in the operator's cage. Economy of space, so far as it is consistent with proper sizes of parts, good ventilation, good insulation and accessibility, is of importance.

Motors for Cranes.

Crane motors are usually series wound. It seems almost unnecessary to say that they should be very simple and strong mechanically, that the electrical insulation should be of the best quality and that they should be designed to stand great variations in speed and load and sudden reversals under load without injurious effects. The highest possible efficiency at some one speed and load is not so important as a good average efficiency over a wide range. Motors of low or moderate speeds are preferable on account of the reduced gear ratio required between motor and winding drum or driving wheels.

Referring in a more general way to the design of cranes and the problems and limitations met by the designer, it is the exception rather than the rule that he has free hands to do as he might wish. Limited space; close approach of hook to roof, sides and ends of building; perfect accessibility of all parts; a large factor of safety; low price—these are some of the requirements which, desirable as they may be, are not always compatible.

Manufacturers and users have underestimated the advantages to both of getting together. The manufacturer should understand fully the requirements of the user, and the user should know the full effect of the limitations he places upon the manufacturer.

April Iron and Steel Exports and Imports.

The month of April showed some increase in iron and steel exports, according to the report of the Bureau of Statistics of the Department of Commerce and Labor. The total value of such exports, not including ore, was $14,933,495, against $14,792,214 in March. Taking the commodities for which quantities are given, however, some falling off is seen. Of these the exports in April were 120,015 gross tons, as compared with 138,679 tons in March. The April exports were well above those for the first two months of the year, as the quantities for February and January were 97,719 and 109,506 tons, respectively. The following table shows the exports of such commodities for the month of April of the present year and last year, as well as for the ten months ending with April:

Exports of Iron and Steel.

	April.		Ten months.	
	1906.	1905.	1906.	1905.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	7,483	3,869	47,413	52,534
Scrap	974	827	8,425	18,196
Bar iron	5,261	4,119	32,120	27,885
Wire rods	1,117	1,669	5,732	14,812
Steel bars	2,113	1,857	17,423	21,111
Billets, ingots, blooms	20,052	19,111	232,938	208,853
Hoop, band, scroll	40	125	4,082	2,668
Iron rails	....	3	....	78
Steel rails	24,859	32,549	282,038	372,380
Iron sheets and plates	775	424	8,006	3,873
Steel sheets and plates	11,389	8,192	62,268	56,769
Tin plates and terne plates	2,547	2,961	7,845	8,403
Structural iron and steel	11,236	9,634	78,683	61,570
Wire	16,173	12,910	130,433	99,423
Cut nails	446	964	5,789	6,826
Wire nails	4,734	2,990	36,452	29,503
All other nails, including tacks	628	312	3,403	3,145
Pipes and fittings*	10,188	....	123,603	....
Totals	120,015	102,516	1,086,653	988,029

* Quantity not stated prior to July 1, 1905.

As compared with March, the above figures show the most important decreases in billets, rails, steel sheets and plates and pipes and fittings. Quite a good increase is shown in wire.

Imports of iron and steel lost considerably in April as compared with March. The total value of the imports of iron and steel of all kinds, not including ore, was $2,548,375 in April, against $3,082,592 in March. Taking the commodities for which quantities are given, the imports for April were 37,920 gross tons, as compared with 50,167 tons in March, 28,407 tons in February and 46,516 tons in January. As compared with March, the April figures showed the heaviest loss in pig iron and tin plates. The following table shows the imports of these commodities for the month of April of this year and last, as well as for the ten months ending with April:

Imports of Iron and Steel.

	April.		Ten months.	
	1906.	1905.	1906.	1905.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	22,885	11,507	220,186	81,021
Scrap	1,200	335	23,921	9,191
Bar iron	1,323	3,157	32,394	20,801
Rails	50	139	8,489	8,496
Hoop, band and scroll	891	1	8,641	1,585
Billets, slabs, bars, &c., steel in forms n.e.s.	1,308	659	15,774	7,707
Sheets and plates	241	57	2,253	1,718
Tin plates and terne plates	3,563	6,751	44,517	61,254
Wire rods	1,631	1,595	15,445	12,323
Wire and articles made from	584	284	3,475	3,118
Structural iron and steel	4,156	235	30,373	2,375
Chains	53	8	264	218
Anvils	35	39	188	142
Totals	37,920	24,767	405,920	209,949

The total value of exports of all kinds of iron and steel, not including ore, in the ten months ending with April was $131,214,200, against $110,788,570 in the corresponding period of the previous year. The imports for the same periods were, respectively, $23,298,049 and $18,388,000. The exports of iron ore in the ten months ending with April were 170,140 gross tons and the imports were 771,042 tons.

The American Foundrymen's Association.

Eleventh Annual Convention.

CLEVELAND, OHIO, June 5, 1906.—(*By Telegraph.*)—The growing interest manifested in the valuable educational work carried on by the American Foundrymen's Association for the betterment of foundry practice was reflected in the record breaking attendance at the eleventh annual meeting of this body and joint convention with the Associated Foundry Foremen, which was opened to-day at the Central Armory. The first day's registration reached a total of more than 700, including, in addition to foundry operators, foremen and equipment manufacturers, the names of many of the wives and daughters of the members of both organizations. The large increase in the membership of the American Foundrymen's Association made during the year proves the wisdom of the reduction in annual dues decided on at the last meeting, and notwithstanding the lower membership fee a comfortable balance was shown in the treasury.

The exhibits of the foundry supply houses and equipment manufacturers, well arranged in the main drill hall of the armory, marked an innovation that should be adopted at future gatherings, and as an educational feature showing advancement in foundry practice it is of as much value as the convention proceedings themselves. The equipment exhibits in many instances were exceedingly pretentious, and included the various types of molding machines, blowers, pig handling machinery and other devices in full operation. The programme of the three-day meeting prepared by the association's indefatigable secretary, Dr. Richard Moldenke, is replete with papers on technical and practical topics, and the success of the exhibition feature is due to the untiring efforts of Henry M. Lane.

The visitors were eloquently welcomed on behalf of the Cleveland foundrymen by N. S. Calhoun of the Johnson & Jennings Company, and response was made by President Thomas D. West. Reports were read by the president and secretary-treasurer, followed by reports of standing committees. A paper by W. K. Barrows, Sharpsville, Pa., on "Influences of Different Ore Mixtures on the Resultant Pig Iron from the Standpoint of the Foundryman," was read by Frank L. Crobaugh.

At the afternoon session a paper on "The Beneficial Effects of Adding High Grade Ferrosilicon to Cast Iron," by A. E. Outerbridge, was read by the secretary. E. H. Mumford read a paper on "Recent Methods of Machine Molding," and W. S. McQuillan, South Norwalk, Conn., read a paper on "Good Molders; Why They Are Scarce." Other papers were: "Twenty Years' Improvement in the Quality of Pig Iron," by E. H. Williams and E. R. Sanborn; "Development of the Thermit Process in Foundry Practice," by W. M. Carr, and "Foundry Tests of Coke," by Dr. Moldenke, all read by the secretary.

At the annual meeting of the Associated Foundry Foremen, held at the American House on Monday evening, strong resolutions were adopted refuting the reports that the National Founders' Association had gained or was gaining control over its organization for the purpose of using its influence in the conflict with the Iron Molders' Union. The article of the constitution giving the object of the association as "solely educational" was emphatically confirmed, and any local violating this clause will be adjudged in bad standing and will thereby forfeit its charter. Officers were elected as follows: Hugh McPhee, Eaton, Cole & Burnham Company, Bridgeport, Conn., president; Hugh McKenzie, American Shipbuilding Company, Cleveland, first vice-president; A. T. Williams, Enterprise Mfg. Company, Philadelphia, second vice-president; F. C. Everett, J. L. Mott Iron Works, Trenton, N. J., secretary and treasurer.

President's Address.

The annual address by the president, Thomas D. West, was on "The Need of a Practical Education." At the outset the speaker called attention to the aim of the American Foundrymen's Association, saying that it was organized for the purpose of encouraging research in the art of founding, for disseminating the knowledge of its principles, and aiding in the improvement of daily practice in all its branches. While it is said that this is a practical age, the speaker considered that designation to be far less warranted than might be wished. He found in the pernicious activities of so-called reformers and in the vague conceptions and theories widely entertained a possibility of danger that should be cause for serious consideration. There is so much of the impractical and incompetent in modern life that the speaker regarded these as responsible for more strife and ill success than all other evils combined. Not one person in fifty is as thoroughly practical and competent as he should or could be, and the foundry business gives ample proof of the shortcomings of those who are presumed to be skilled artisans. The deficiencies in modern industrial life are to be attributed to the fact that our schools do not give the rising generation the practical training they should have.

The allurements of a life of ease and refinement to which the Caucasian race is so partial find expression in the pursuit of a professional or classical education and the ignoring of manual pursuits because they may involve hard work and dirt. If this evil is not corrected the day will come when all classes of our people will suffer keenly for the errors of impractical parents and instructors.

There are two factors which must be taken into account more fully in our educational system as well as in our home training if better conditions are to be realized in the future, and these factors are: a practical education and manual skill. When on every hand there are to be found young and old unable to earn a living for lack of the above mentioned factors in their education, when there is a great demand for manual skill, which, as a rule, requires as much time and effort to be attained as the schooling now in vogue, if not more, why should not manual skill be respected and encouraged more than it is?

PRACTICAL TRAINING ADVOCATED.

The education of our youth should be confined to that which can be directly utilized. The time wasted in ornamental studies that can never be made use of ranges from one to four, and often more, of the most precious years of life, and passes many on to an age when they cannot take up studies or an apprenticeship which in a few years might enable them to make a good living. All children should have a common school education, but when they have attained this the parents or guardians should discover, if possible, the capabilities of their children and then decide for what vocation they shall be trained. Even special study that does not bear directly on the vocation to be followed should be put aside. What is a necessity should be studied with zeal and a regard for the saving of all time possible. What sense is there in spending valuable time studying subjects which, because they cannot be utilized, will soon be forgotten?

Few of our educators are in a position to comprehend the necessity of the practical as compared with the book work of the professional or classical student. Every energy has been directed to perfecting the latter, and now this should be done for the former. Good literature on the practical aspects of life and the attainment of skill can be made to serve as text-books as much as studies on political economy, history and English literature. Once it is recognized that there is as much need of the practical as the professional, and text-books will be forthcoming that will improve the views of the masses in a way now impossible. It is not to be expected that a change of this kind can be made in a few years, as the machinery of education is naturally devised at the present time for carrying out the contemporary tendencies. Even our universities and colleges are at the present time driven to combat the evils of excess in sports, which, unfortunately, are strongly backed up by the public support given to athletic games. The excesses in this line are now so opposed to the aims of these institutions that at a recent gathering in New York City, of professors and instructors, measures were taken to prevent the loss of time now resulting from these games, to the great detriment of classroom and laboratory work.

SPECIALIZATION DEMANDED.

The revolution in industry through the specialization of the past 10 or 20 years is a move toward the attainment of the practical in science that has not received the recognition it deserves. It really means that no one should expect to master more than one vocation. At one time an individual could undertake to be master molder, machinist and blacksmith, but this is not possible now. All who are highly skilled in the art of founding know that he who wishes to be in the lead, or the master of the sand heap and cupola, either as a worker or manager of men, can spend every minute of a ten-hour day in the shop and his evenings in study and research during a long life, and still have much to learn.

To be a practical people we must, in connection with the other reforms mentioned, specialize our studies and labor so as to be masters of one vocation, not "jacks of all trades and masters of none." The smatterer or "would be" is an affliction that causes many of our industrial enterprises great losses and perplexities. To the lower working classes it means high cost of living and often much misery, which is entirely uncalled for and should not exist.

The starting of the reform needed would lie chiefly with our leading associations. Let them appoint committees consisting of men broadly experienced in the actual work of all the lines of endeavor they represent, to select the subjects to be followed after passing through the grammar school grades, as well as to designate what the demands are for the employment of skilled workers in their respective lines. These associations should include, among others, architects, blacksmiths, the business professions, carpenters, chemists, civil engineers, draughtsmen, doctors, editors, electricians, farmers, masons, mechanical engineers, metallurgists, mining engineers, ministers, molders, patternmakers, painters, plumbers, and down the list to supply men, stationary engineers and wheelwrights.

A founders' committee would not, I think, recommend the wasting of time by those wishing to learn the art of molding upon studies that could rarely if ever be utilized. In fact, the preparatory study could be narrowed to a common school education, with drawing, chemistry and some metallurgy. The latter three could be taken after leaving the regular school as special studies in day or night schools under some instructor or technical institution knowing just how much of these studies the molder, foundry foreman or manager should pursue. This committee, aside from recommending what special studies were necessary, could also set forth the title of such books as should be read at leisure, in addition to those used as text-books.

THE FOUNDRYMEN'S ASSOCIATION DOING ITS PART.

This address may be considered as an appeal for a reform in education and home training to an association that with a few others stands foremost in doing what can be rightly commended as advancing civilization. What greater liberality of spirit can be shown by a body like the American Foundrymen's Association than for its members to give gratuitously to the world their trade secrets and experiences, which cost them great labor and often great expense, and which but a few years ago comparatively speaking all would have held in their strong boxes.

We have socialism and other isms asking for public support, but few have given this and other kindred associations credit for putting aside selfishness, for gratuitously distributing information, and creating among rivals in trade a co-operation beneficial to the masses as well as themselves.

There are over 5000 proprietors of foundries and as many more superintendents and foremen, besides allied interests, such as chemists, pattern makers and supply men, that should take great interest in our association's work. There are many who naturally do take a great interest, and those who do not would doubtless do so were they to attend one of our meetings or to take the time to investigate the good work that has been accomplished by our members helping each other to advance knowledge and skill in the art of founding.

While much good has been accomplished by our association, there is still greater work before us; but to do this properly we should have a much larger membership. It is to be hoped that this Cleveland convention will result in giving an impetus in this direction. In justice to ourselves we cannot recede; we must enlarge and press forward. Can we say more in soliciting outside craftsmen to join us? Education is our association's motto, and by making it as practical as possible we can do a great good in helping to make this world grow better. This association and kindred societies will certainly have to labor for more practical methods of instruction if, as a people, we expect to develop the needed skill in our artisans or to obtain the greatest comfort and happiness for the masses.

Report of the Secretary-Treasurer.

In presenting a brief report of the activities of his office during the fiscal year just closed your secretary begs to state that the affairs of the association are in satisfactory condition, its influence steadily rising and its usefulness growing greater all the time. The year has been one of exceptional activity in the foundry, but also the trade has been so hampered by high priced materials, poor deliveries and economic troubles that on the whole few foundrymen look back upon it with satisfaction. We may except only those who have so far specialized their work that the foundry end need only make part of the profit of the concern. These facts, peculiar as they may seem, when taken in connection with the era of prosperity we are in, have been gathered by voluminous and far extending correspondence as well as by personal interviews during the year. No wonder that the foundry is so sensitive to all kinds of disturbances, and that the layman regards pig iron, which is, without his knowing it, the big item in the foundryman's bills, as the best barometer of trade conditions.

As a result of the reduction in the annual dues last year the association has slightly increased its membership, having exactly 300 members at the present time. Very strenuous efforts were made to obtain new members, both by correspondence and personal interview. The association is well known in all parts of the world. Letters come from everywhere asking information, advice, and even plans and estimates for new foundry ventures. Everything possible is done to oblige the correspondents, and wherever possible the difficulties of engaging in new enterprises are pointed out, in order to save loss on the one hand and destructive competition on the other.

Perhaps the best criterion of the value of the association is the fact that other countries are following our methods with profit to themselves. Again, many local associations, organized for a variety of purposes, find it beneficial to discuss foundry problems of a technical nature at their meetings. Thus the educational feature, for which this association stands exclusively, is widely recognized, and your secretary is often called upon to assist at these occasions. A new foundrymen's association has been formed on the Pacific coast and had not the terrible disaster occurred there we should have had some representatives of this very live part of the country with us to-day. We hope for renewed prosperity and a vigorous resumption of the industry along the West coast, and trust that we may hold one of our meetings there at no distant date.

The American Foundrymen's Association has been signally recognized by the election of your secretary as an honorary member of the British Foundrymen's Association and further by his appointment on the National Advisory Board for Testing Fuels and Structural Materials recently created by the President. Its members are on a committee now engaged at St. Louis in testing coke for the Government at the plant which we expect to see a part of the magnificent institution in Pittsburgh founded by Andrew Carnegie. Furthermore, our members are now at work in formulating standard specifications for foundry coke, in connection with the American Society for Testing Materials. Thus our activity is ever extending, and for the benefit of our industry and the world in general. May we not hope for better support on the part of the foundrymen of the country?

The Government, through its Bureau of Standards, has now formally taken over our standardizing bureau, thus closing a chapter in our life which has proven of great value to scientific founding as well as to the iron laboratory. To our president, Mr. West, is due the credit for its inception and nearly all the labor of its maintenance. The Case School of Applied Sciences, where we meet once at this convention, through Professor Smith has also contributed largely to the success of this undertaking, now well known throughout the civilized world. With the taking over by the Government of this work it will be enlarged to include the steel industry, and possibly go into further branches of interest to foundrymen in general. We hope for a wide field and all possible success in this direction.

Considerable progress has been made along the line of trade schools during the year. Our association is not in position to finance any such undertaking. It can but recommend and urge the need of these public improvements. Others are taking up the question and are better able to carry it through. We rejoice with them that education is thus making headway, and we need not fear European competition quite so seriously as formerly. Let the good work go on, however. It satisfies our pride to have done the preliminary labor.

We have again to thank the *Foundry* for the courtesy of printing our transactions under an arrangement which gives them to us far below what it would cost us to handle the problem. We trust that this disinterested spirit will be duly rewarded in other directions.

The receipts and expenses for the fiscal year are as follows:

Received for dues, &c.	$1,045.18
Standardizing bureau	495.72
Total	$1,540.90
Disbursed for salaries	$894.62
Printing	92.02
Transactions	154.25
Postage	233.00
Sundries	23.30
Total	$1,397.19

The balance in the treasury is $143.71.

Molders Win in Chicago.

CHICAGO, ILL., June 6, 1906.—(*By Telegraph.*)—Forty-nine foundries in the Chicago district, operating 52 shops, have signed the agreement submitted by the Conference Board of the Iron Molders' Union of North America, making the minimum rate of wages for molders and coremakers under the jurisdiction of the Chicago Conference Board $3.25 per day and the standard working time nine hours per day, to be worked between the hours of 7.30 a.m. and 5.30 p.m. It is claimed by union officials that only 16 shops are now out, employing about 450 men. The total membership in the Chicago district is about 2800 men. Advices from Milwaukee and St. Paul state that four shops in the former city and five in the latter have signed the agreement.

The Passaic Steel Company.—At a meeting of the directors of the Passaic Steel Company, Paterson, N. J., on June 1, an expert accountant, who had been working since the annual meeting in April under the direction of a committee of stockholders and bondholders, announced that the plant had been operated at a loss amounting in the last three years to $902,455.28. A resolution was adopted authorizing the appointment of a committee to devise a plan for future operations. This committee has had several sessions in the past week and is now expected to report within a day or two. As indicated in an article in *The Iron Age* of December 7, 1905, page 1512, dealing with the financial condition of the Passaic Steel Company, there is outstanding $2,500,000 of first mortgage bonds, preferred stock amounting to $784,145.50 and $5,000,000 of common stock. A large portion of the $1,000,000 of preferred stock authorized April 4, 1905, was subscribed for by creditors of the company, but there was also realized a considerable amount of cash.

The Steel Corporation and San Francisco.

The United States Steel Corporation has given a demonstration at San Francisco of the immense benefit which great corporations are sometimes in a position to bestow. The disastrous fire which followed the earthquake on April 18 had hardly been extinguished when on April 26 a commission representing the corporation left Chicago, arriving in the stricken city on the 29th. Of this commission Frank Baackes, general sales agent of the American Steel & Wire Company, was chairman. This commission was charged with the great responsibility of passing upon the credits of San Francisco customers of the subsidiary companies of the corporation. The objects of the commission were announced, and very rapidly the condition of many San Francisco firms was learned and the information was given that ample credit would be extended to them to enable them to resume operations, and they were thus able to order immediate shipments of goods. While this was done on strictly commercial lines, it was a step which did more to revive the courage of the merchants of the city and establish confidence in the future than any other influence.

The United States Steel Corporation represents through its subsidiary companies such a diversity of interests, and therefore reaches such a variety of trades, that no other organization in the world would have been able to accomplish the same purpose. If the merchants had been obliged to rely upon themselves in re-establishing their credit, it would have taken a very great deal of time, and it would have been necessary for them to have placed themselves in communication with numerous manufacturers throughout the country. The corporation, however, was able in itself to save this time and allay anxiety. It did not wait to receive applications, but made haste to extend the kind of practical assistance most necessary and most highly appreciated under the circumstances. Thus in one stroke was accomplished what would otherwise have taken months. This is one of the results accomplished by the formation of a large corporation which probably had never been foreseen by those who were instrumental in its organization. It is not known to whom the credit is due for this action, but its accomplishment has won immense prestige for the corporation.

The members of the commission who have returned from San Francisco state that business originating in that city is now very heavy in such lines of material for building as nails, piping, sheets and also for all kinds of tools such as are used by workmen in cleaning up ruins and putting up temporary buildings. It will, however, require months to clean up the *débris*, not only because of the very great quantity of work to be done, but also because it will take considerable time to adjust insurance, and in the meantime many owners will not touch the ruins of their property so as to avoid complications with insurance adjusters. It will probably be well into next year when the real work of constructing permanent buildings will be attempted. The demand for structural steel will, therefore, be only moderate until that time. Sufficient steel is now in stock in the city to take care of immediate needs. It is estimated that 50,000 tons will easily cover the requirements of San Francisco in the structural line next year. It is true that the permanent buildings will be largely constructed of steel, but these buildings will not include many skyscrapers, but will mainly consist of store buildings and warehouses of two or three stories. The tonnage stated will be sufficient to

put up many such buildings. The demand for steel from San Francisco next year, therefore, may not amount to more than 5 per cent. of the total structural steel output of the country. This can easily be supplied by the manufacturers of the United States. So far as can be learned, absolutely no orders have been sent to foreign makers.

PERSONAL.

T. P. Bisland has resigned as superintendent of the Hudson Iron Company's iron mine, near Fort Montgomery, N. Y., and is now consulting engineer of the White Silver Company, which is carrying on extensive cobalt and silver mining operations at Cobalt, Ont., in the Temiskaming district. Mr. Bisland is succeeded at the Hudson mine by Richard Penhale. Earle C. Bacon of New York is consulting engineer.

At the celebration of the seventy-fifth anniversary of the Koeniglich Preussische Technische Hochschule of Hannover, Germany, one of the most prominent scientific institutions in the world, the honorary degree of doctor of engineering was conferred on Ernst Koerting, the noted European engineer and of the well-known firm of Gebr. Koerting, A. G. Koertingsdorf, Hannover, for his scientific researches and discoveries in gas engines and other important branches of engineering. Dr. Koerting lives in Pegli, Italy. He is interested in a number of large enterprises in the United States, among them the De La Vergne Machine Company, New York, as well as the Schutte-Koerting Company, Philadelphia, and is at present sojourning in this country.

Following the resignation of C. S. Robinson as general manager of the iron and steel departments of the Colorado Fuel & Iron Company, announced in these columns May 24, J. B. McKennan has been appointed manager of the Minnequa Works and J. D. Gilchrist, who has been superintendent of iron mines under Mr. Robinson, will take charge of the company's iron mining and quarry interests, with the title of manager iron mines department. The statement that J. A. Durfee would succeed Mr. Robinson as general manager is incorrect; he will be assistant to Mr. McKennan, with the probable title of assistant manager of the Minnequa Works, or general superintendent.

John Birkinbine of Philadelphia recently delivered an address, illustrated by about 50 stereopticon slides, on the "Development of the Iron and Steel Industry of the United States," before the Pike's Peak Polytechnic Society at Colorado Springs, Col.

Herman S. Hastings, Worcester, Mass., for several years secretary of the Worcester Metal Trades Association and head of the Worcester Labor Bureau, has been elected a representative of the National Founders' Association.

Jacob Ginsburg has resigned the presidency and severed connection with the Girard Iron & Metal Company, Philadelphia, Pa. He will take an extended trip abroad for his health and on his return expects to re-enter the iron and metal business.

George E. Rose, formerly superintendent of the Edgar Thomson steel works, has been appointed to succeed O. O. Laudig, resigned, as superintendent of blast furnaces of the International Harvester Company, with offices at South Chicago.

Edward Marshall Zehnder has been elected president of the Scranton Bolt & Nut Company, Scranton, Pa., to fill the unexpired term of William D. Zehnder, deceased.

Thomas A. Beattie has been appointed manager of Riverside Department, National Tube Company, Wheeling, W. Va., to succeed Frank H. Crockard, resigned.

W. E. Corey, president of the United States Steel Corporation, has just returned from a short recreation trip to France, where he spent two weeks.

The capital and surplus of the Coal & Iron National Bank of New York were increased June 1 to $1,000,000 through the issuance of additional stock and the accumulation of earnings.

NEWS OF THE WORKS.

Iron and Steel.

The National Metallurgic Company, 43 Exchange place, New York, started a second kiln last week at its iron ore nodulizing plant on Newark Bay, New Jersey. Pyritic cinder is the material treated for the most part, but a considerable tonnage of magnetite concentrates was recently put through the kiln with excellent results. The output of the plant will now be over 200 tons a day.

Sharpsville Furnace, at Sharpsville, Pa., is expecting to blow in about the middle of June.

The Refined Iron & Steel Company has been incorporated with a capital of $300,000, with offices in the Lewis Block, Pittsburgh. The company has bought the plant of the United States Wire & Nail Company, near Shousetown, on the Pittsburgh & Lake Erie Railroad. It is expected that operations will commence about August 1, and the necessary repairs and changes are being made. The product of the mill will be special high grade iron for stay bolts, chains, bolts and nuts, &c. The capacity will be 50 tons daily, which may be increased to 150 tons a day. The officers are: J. C. DeNoon, president; I. N. DeNoon, treasurer; Henry F. Gilg, secretary, and William Stubblebine, general manager.

The new 16-inch mill at the National works of the National Tube Company, at McKeesport, Pa., is almost finished and will soon be ready for operation. The mill is contained in a steel building, 160 x 400 feet, and the equipment is now being installed, all of which will be driven by electricity.

Clinton Furnace of the Clinton Iron & Steel Company, Pittsburgh, is out of blast for relining and repairs. The stack will probably start again about July 1.

The Brown Hoisting Machinery Company, Cleveland, Ohio, has secured a contract for the building of ore bins, skip and trestles at Haselton Furnace of the Republic Iron & Steel Company, Youngstown, Ohio.

One Dayton Furnace, at Dayton, Tenn., which went out of blast in April, was blown in on May 23.

One Crozer Furnace of the Virginia Iron, Coal & Coke Company, at Roanoke, Va., which has been out of blast for several months, was blown in on May 19, 1906.

Star Furnace, at Jackson, Ohio, was blown out on June 2.

Owing to the rapidly increasing business of the Halcomb Steel Company, Syracuse, N. Y., a further addition to its capital stock of $300,000 has just been made and fully subscribed, making the total capital stock $1,200,000. Four more crucible furnaces are being built, an additional sheet mill is being put in and the boiler capacity is being increased 1000 horse-power. Large additions are also being made in the buildings of the melting department, rolling mill and boiler house.

The Mt. Hope Iron & Steel Company has been organized at Boston, to take the plant of the Mt. Hope Iron Works, Somerset, near Fall River, and operate it for the manufacture of structural iron work, skelp, nails, and rivets. The company has an authorized capital stock of $100,000, and its officers are: President, Alfred H. Ambler, Winthrop, Mass.; vice-president, George Watson, 110 State street, Boston; treasurer, James Plant, Syracuse, N. Y.; assistant treasurer, James A. Plant, Somerset; general manager, William F. Meeker; superintendent, Charles W. Meeker. The business of the Mt. Hope Iron Works was conducted for many years by Job Leonard, Fall River, for the manufacture of nails, but the plant was closed down some two years ago, and has been idle since. The new company plans to make a specialty of structural iron work at the beginning. Additional rolls will be installed. Later it is proposed to take up the manufacture of nails, the machinery for which is still in the works.

General Machinery.

Plans and specifications have been sent to contractors for bids by the Baltimore & Ohio Railroad for extensive improvements which will be made in the terminals at Cleveland, Ohio. These improvements will include the erection of a ten-stall standard brick roundhouse, gravity coal tipple having a capacity of 360 tons, frame sand house with a capacity of 35 cars of wet sand and 45 tons of dry sand, machine shop building, including an engine room, 20 x 60 feet; boiler room, 40 x 60 feet; machine shop, 60 x 90 feet; oil and storehouse, including oil house with cellar, 30 x 45 feet, with office 15 x 70 feet for the general foreman and storekeeper; trainmen's building, 35 x 50 feet. There will also be a standard 80-foot turntable pit and a double ash pit, 150 feet long, to be equipped with a hoisting crane and automatic grab buckets.

The Atlantic Tool & Machine Company, Chicago, has been incorporated with a capital stock of $30,000 to manufacture special and experimental machinery. The incorporators are Edward O. Hoell, Wm. Ranen and Patrick T. Kelly. Office of the company is in the Atlantic Building, corner of Jackson boulevard and Canal street.

The Toledo Machine & Tool Company, Toledo, Ohio, designer and builder of machine tools, recently booked, among other large orders, an order for a drop forging equipment consisting of one

each 10,000, 8000, 3000, 2000, 1600, 1500, 1100 and 1000 pound trimming presses. Another order booked by this company for an equipment for one of the larger electrical manufacturers was for 27 presses, ranging in weight from 3000 to 75,000 pounds. All of these 27 machines are to be directly connected motor drive machines.

The Pittsburgh Gage & Supply Company, brass and iron founder and machinist, contractor for complete piping installations and maker of engineering specialties, has bought a new site, located at Thirtieth street and Liberty avenue, having 168 feet frontage and 174 feet depth. The company is working on plans for a new building which will have a floor space of about 210,000 square feet. The building will be of steel and brick and slow burning construction, six stories and basement. A joint switch of the Pennsylvania and Baltimore & Ohio railroads will enter the buildings, which will be used jointly for jobbing and manufacturing, combining the present stores and warehouses now located on Water street and the shop now located at Thirty-first street and Liberty avenue, Pittsburgh.

The T. B. Wood's Sons Company, manufacturing engineer, Chambersburg, Pa., is preparing plans for a new shop.

Power Plant Equipment.

The Blue Mountain Iron Works, John C. Koehler, lessee, Baker City, Ore., has recently completed a new pattern shop and added new machinery to its boiler shop, consisting of 72-inch plate bending rolls and punch.

The Hawley Down Draft Furnace Company, Chicago, has secured the contract for down draft furnace equipment in connection with 1000 horse-power Stirling boilers for the addition to the Chicago Athletic Association Building.

A. L. Ide & Sons, Springfield, Ill., report the following among recent sales of their gas engine: O. E. Ish, San Francisco, 10 x 10 inch; Hudson River Lumber Company, De Ridder, La., 11 x 12 inch; Cincinnati Ice Company, Cincinnati, 11 x 10 inch; Fairmount Hotel, San Francisco, 11 x 16 x 12 inch; Companhia Paulista de Vias Ferraes E. Fluviaes, Santos, Brazil, 12 x 12 inch; Kingan & Co., Richmond, Va., two 13 x 12 inch; C. F. Edwards, Coffeen, Ill., 13 x 12 inch; Parral & Durango Railroad Company, Parral, Mexico, 16 x 14 inch; W. E. Kilgore, Wise, Va., 11 x 10 inch; Birk Bros. Brewing Company, Chicago, 13 x 12 inch; Ayer & Lord Tie Company, Grenada, Miss., 14 x 14 inch; Homan Mfg. Company, Cincinnati, Ohio, two 16 x 14 inch; City Hall Building, Cleveland, Ohio, 16 x 14 inch; Atlantic & Gulf Portland Cement Company, Ragland, Ala., 14 x 15 inch; Orange City Electric Light Company, Orange City, Iowa, 8 x 10 inch; Chicago Cold Storage Warehouse Company, Chicago, 15 x 22 x 16 inch; Lufkin Land & Lumber Company, Farber, Texas, 13 x 12 inch; Hotel Beresford, New York, 16 x 16 inch; Winona Water, Sewerage, Light & Ice Company, Winona, Miss., 13 x 12 inch; Gulf, Colorado & Santa Fe Railway, Silsbee, Texas, 11 x 10 inch; United States Construction & Finance Company, Garden City, Kan., two 13 x 12 inch; Greenwald Packing Company, Baltimore, Md., one 9 x 10 and one 14 x 14 inch; Oklahoma College, Stillwater, Okla., 10 x 10 inch; Manhattan Hospital, Wards Island, New York, 16 x 14 inch; City of Richland, Ga., 9 x 10 inch; Weinhard Brewery, Portland, Ore., 11 x 12 inch; Star Brewery, Belleville, Ill., 13 x 14 inch; Richmond-Eureka Mining Company, Eureka, Nev., 11 x 12 inch; Cleveland Worsted Mills, Ravenna, Ohio, two 12 x 12 and one 15 x 22 x 16 inch; Flinkote Mfg. Company, Rutherford, N. J., 7 x 10 inch; Bode Wagon Company, Cincinnati, Ohio, 16 x 14 inch; Wm. Zoller Company, Allegheny, Pa., two 14 x 14 inch; John O'Brien Lumber Company, Somers, Mont., 16 x 14 inch; City of Starkville, Miss., 17 x 16 inch; Occidental Building, Chicago, two 18 x 18 inch; Philip Carey Mfg. Company, Lockland, Ohio, 12 x 12 inch; Michigan Alkali Company, Wyandotte, Mich., 13 x 22 x 26 inch.

The Gilson Mfg. Company, Port Washington, Wis., is adding to its plant a new building, which will be 60 x 100 feet and will be used exclusively for the manufacture of gasoline engines. It will be ready for occupancy in a few weeks. The company occupies property having a frontage of over 600 feet on Park street, with a ground area of between 5 and 6 acres.

The Stroudsburg Engine Works, Stroudsburg, Pa., has been reorganized with increased capital stock and is making improvements that will greatly increase the capacity.

The Pierce-Crouch Engine Company, New Brighton, Pa., builder of the Brighton gas engine, has purchased the charter and business of the Pittsburgh Machine Company and combined the two, taking the name of the latter. The new company will continue the manufacture of the same lines as the former separate companies, and in addition will take up other lines of machine and tool specialties. The officers of the new company are: R. L. Kenah, Jr., president and treasurer; John Read Minor, vice-president; D. J. McComb, secretary; J. E. Brain, assistant treasurer, and Charles W. Shoemaker, superintendent. E. E. Pierce, who has been president of the company since its organization about 15 years ago, remains as a director and consulting engineer. H. E. Cole, a mechanical engineer of Pittsburgh, will be a director and will have charge of the Pittsburgh office, located in the Park Building.

Machinery is being purchased by a company organized by Joseph P. Riordan, mayor of Harrison, N. J., and others, which intends to establish an independent artificial ice plant. The site has been selected and plans for the buildings are now being prepared. It is hoped to have the plant in operation by August.

The town of Athol, Mass., has appropriated $15,000 for the establishment of a municipal electric plant.

The village of Tallula, Ill., will receive bids until June 20 for the construction of a water works system.

Bids will be received within a few weeks for a pumping plant for the Edgartown, Mass., water works. Louis Hawes, 101 Tremont street, Boston, is engineer.

The Ultra Motor Company has been organized at New Haven, Conn., to manufacture combustion engines of the design of Joseph Schaeffer, 233 East Eighty-sixth street, New York. Mr. Schaeffer has been designing combustion engines of the high speed type for a number of years, in Germany and the United States, with especial attention to procuring efficiency and economy, particularly for commercial purposes, such as in trucks, stationary and transportable power plants. A specialty will be made of alcohol engines. The company's plant will be located in New Haven. The incorporators of the company are Joseph Schaeffer, John K. Brachvogel and Otto S. Jung, all of New York, and John H. Connell, New Haven. Mr. Schaeffer states that the company is provided with the tools and machinery necessary for immediate needs, but it is expected that the present facilities will have to be increased, in which case new machinery will be required.

The County Commissioners of Middlesex County, Mass., with office at the court house, East Cambridge, Mass., are in the market for a generating set for the engine room of the Middlesex House of Correction. Proposals will be received until June 19. Details of requirements may be obtained of Warren Crane, House of Correction, East Cambridge.

The business of the Bertelsen & Petersen Engineering Company, East Boston, Mass., has been incorporated under Massachusetts laws with capital stock of $75,000. The officers are: President, Jens Bertelsen; vice-president and general manager, John P. Petersen; treasurer, Willis E. Carsley. The company builds marine engines and boilers and does ship repairing. New buildings will probably be erected soon, but the company states that no new machinery or tools will be required.

The boiler works operated for many years in New Castle, Pa., by William Fleming & Sons have been taken over by a company incorporated under the laws of Pennsylvania as the William Fleming's Sons Company. The capital stock of $10,000 is all owned by members of the Fleming family.

Foundries.

The Herman Pneumatic Machine Company, maker of pneumatic jarring molding machines and foundry equipment, has been incorporated and has moved its plant from Sharpsburg to Zelienople, Pa., where a new three-story brick building with 30,000 square feet of floor space has been erected.

The Fort Pitt Malleable Iron Company, Pittsburgh, has enlarged its plant at McKees Rocks, Pa., and is now building additional annealing ovens to provide a capacity of 1100 tons per month. This company has given up making gray iron castings and in the future will confine itself entirely to the manufacture of malleable castings.

The Illinois Malleable Iron Company, Chicago, will shortly have completed at Diversey boulevard and the Chicago & Northwestern tracks a six-story and basement building, of mill construction, approximately 60 x 200 feet. It will be used as a warehouse for plumbing and steam supplies. The company will soon undertake the erection of additions to the two gray iron foundries across the track from the warehouse, which will give 8000 square feet additional floor space in these two buildings.

The Pittsburgh Steel Foundry, manufacturer of steel castings, is building an addition to its present plant at Glassport, Pa., which will be used for the manufacture of car bolsters exclusively. About $50,000 will be spent on the new building and in equipment, and it is expected that the addition to the plant will be completed and in operation some time in August.

The Damascus Crucible Steel Casting Company, New Brighton, Pa., has given up making tool steel and is now turning out crucible steel castings only, a specialty being made of small castings. The officers are: Charles Capper, president and general manager, and C. H. Capper, secretary and treasurer.

The stockholders of the Craig-Reynolds Foundry Company, Dayton, Ohio, voted, May 29, to sell the entire plant, which covers about 6 acres. A Board of Directors was elected, as follows: H. N. Reynolds, Geo. B. Smith, Dayton; Wm. C. Proctor, Thomas B. Shipley and E. B. Emerson, Cincinnati.

Bridges and Buildings.

The Wabash Construction Company has been incorporated at Terre Haute, Ind., with $100,000 capital stock, to build bridges, wharfs, docks, railways, &c. The directors are Wm. P. Ijams, Fred. B. Smith and O. D. Guilford.

The Amsler Engineering Company, Diamond Bank Building, Pittsburgh, has recently completed a three story building for the J. Baum Safe & Lock Company at Cincinnati. The framework of the building is constructed of twisted iron bars and the sides and roof are of re-enforced concrete. The company has

also installed an Amsler gas producer, 11 feet in diameter, and 12 feet high in the plant of the Joseph Kohler Sons Company, at Sheboygan, Mich.

Fires.

The carpenter shop, pump house and other buildings of the Pennsylvania Steel Company, Lebanon, Pa., were damaged $5000 by fire on June 3.

The Highland Machine Shop, Highland, near Baltimore, Md., was damaged $4000 by fire last week.

The Leonard Stove & Range Company's factory at Bowling Green, Ohio, was destroyed by fire last week. The loss is placed at $50,000.

Hardware.

The Stein Double Cushion Tire Company, Akron, Ohio, manufacturing solid rubber tires exclusively, reports business in this line as very satisfactory. While the plant has been enlarged to more than double its original capacity, which was not very small at that time, the company is compelled during the busy season to run its full force night and day in order to meet the demand. The company makes special claims for the durability and riding comfort of its tires.

The Gem City File Works, Quincy, Ill., is adding a new building to its plant, 30 x 150 feet. This has been made necessary owing to the increase in the demand for the company's product. All of the file making machinery which will be installed is of special design and was purchased in Sweden.

Jay H. Newbury, Goshen, N. Y., has made considerable enlargement in his plant during the past year and just now is completing an addition to his shipping room. Mr. Newbury manufactures iron pipe fittings for gas, steam, water and oil, and also gray iron castings to order.

The Arawana Mills, Middletown, Conn., manufacturer of hammocks, window screen cloth and cotton tissues, of which I. E. Palmer is the proprietor, is to erect a brick addition, 52 x 100 feet and three stories.

The Stanley Rule & Level Company, New Britain, Conn., is to make extensive additions to its plant. The office building, which is 40 x 200 feet, will be raised from a six to a seven story building. The remainder of the enlargements will be for storage purposes, comprising sheds 29 x 160 feet, 43 x 108 feet, 30 x 90 feet, 29 x 204 feet and 29 x 115 feet.

The Collins Axe Company, Boston, Mass., has been incorporated in Massachusetts to carry on the manufacture of axes. The business has been conducted as a copartnership for several years, with works at Holbrook, Mass. The officers are: President, James W. Collins, Holbrook; treasurer, Fred. P. Butman, Holbrook; clerk, G. Phillip Wardner, 28 State street, Boston.

The North & Judd Mfg. Company, New Britain, Conn., manufacturer of harness hardware, is to erect a new building for the storage of finished goods, packing and shipping purposes. The building will be 50 x 140 feet and seven stories, of brick and heavy mill construction. It is expected that it will be completed about September 1.

The Taunton Stove Lining Company, Taunton, Mass., has been incorporated in Massachusetts with capital stock of $24,000, to manufacture stove linings. The business and name are not new and are very well known in the trade. The officers are: President, Clarence S. Parker; treasurer and clerk, J. Walter Parker; directors, these officers and O. C. Stanley.

A special meeting of the stockholders of the Bristol Specialty Company, manufacturer of wood and metal specialties, Bristol, Conn., has been called for June 20 to determine whether or not the business of the corporation shall be wound up. While the present corporation may not be continued, the business will undoubtedly be carried on either under its present management or under some reorganization.

The Hunt Mfg. Company, Antrim, N. H., manufacturer of the Pacific power paring and coring machines and family parers, has removed its business to Greenfield, Mass. The business was recently established, but is said to have made a substantial and gratifying start.

Lebanon Chain Works, Lebanon, Pa., has lately completed a new building, 120 x 200 feet, which will be the main part of the company's plant. This building has been fitted up with the most improved machinery and has been arranged in accordance with the experienced ideas of Mr. Attwood, president of the company. On one side of the building are arranged the furnaces for hand made chain, and on the other side is located the machinery for machine made chain. The plant in full operation will have 50 furnaces for hand made chain and 200 oil furnaces for the machine made article. One part of the plant has also been equipped for the manufacture of light forgings of various kinds. In the engine room, where motive power is supplied by both electricity and steam, is also located a well fitted machine and repair shop, equipped with modern appliances. The old testing machine, with a capacity of 600,000 pounds, will be installed in the building, together with a new one of 2,000,000 pounds capacity. Oil tanks are also being placed in the ground for the storing of fuel oil for the furnaces. By the scheme adopted the pipes will be filled by an engine, and at night all of the oil will run back in the tanks, leaving the plant pipes entirely empty.

The Wallingford Mfg. Company, manufacturer of hardware specialties, Wallingford, Vt., will erect a new forge room building, 70 x 75 feet, and a three story storehouse 75 x 100 feet.

The Spencer Wire Company, Worcester, Mass., is to erect an addition to its Worcester plant, to be 50 x 75 feet, and three stories for its music and card wire departments. It is under contemplation to build a new office building at Worcester, the space now devoted to the purpose being needed for a packing room. A new cleaning and annealing room will be built at the plant of the company at Spencer, Mass., to replace the building recently destroyed by fire. The new building will be 54 x 90 feet, one story and basement, and will have the most modern equipment in every respect.

Labor Notes.

The wage scale of the machinists employed in the shops at Youngstown, Ohio, will expire July 1. A new scale, which calls for an advance, is being prepared by the machinists and will be presented to their employers this month. The minimum rate is now 30 cents an hour, and nine hours constitute a day's work. In most of the Youngstown shops during five days of the week the journeymen labor ten hours, which gives them the privilege of quitting work Saturday mornings at 10.30 o'clock, the specified 54 hours for the six days having been completed.

Last week the National Erectors' Association, through H. D. Meskimen, secretary of the Pittsburgh district, issued a statement denying a report put in circulation that the McClintic-Marshall Construction Company had broken away from the organization and was about to make terms with the Structural Iron Workers' Union. The company in question still stands for the open shop, among others bound to the same policy being the American Bridge Company, Pennsylvania Steel Company, Phœnix Bridge Company, Riter-Conley Mfg. Company, Pittsburgh Steel Construction Company, Heyl & Patterson, Levering & Garrigues, Milliken Brothers, Post & McCord, Wisconsin Bridge Company, J. B. & J. M. Cornell and F. L. Shoemaker.

The Cleveland coremakers are demanding an increase to $3 for a nine-hour day, the same as offered the molders. The local Manufacturers' Association has offered the coremakers $2.75 for a nine-hour day, and the situation is open at present. The union machinists have been recruiting members during the past few months, and following a meeting held June 4 it was reported that demands would soon be made for an increase of wages from 30 cents to 35 and 40 cents an hour, according to the shops.

The Gröndal-Kjellin Company, Limited, of London, England, and the American Gröndal-Kjellin Company of New York, both controlled by the Naylor interests, have negotiations with a number of firms in Europe and the United States for the use of the Gröndal-Kjellin concentrating and briquetting process or the Kjellin electric furnace. At the Krupp works at Essen a plant will be installed for the production of steel by electricity, and other contracts have been made with firms in Germany, France and Italy. Vickers, Sons & Maxim in England will install the Kjellin furnace, as will also Baldwins, Limited. The Pennsylvania Steel Company's concentrating plant at Lebanon, Pa., which started last year, will employ the Gröndal process for concentration alone, but instead of briquetting the ore will nodulize it in a National Metallurgic Company plant.

At Norwalk, Ohio, May 29, four bridge companies and six agents of such companies were fined for violating the antitrust law of Ohio. The allegation against the companies and agents was that they had effected a combination under which the County Commissioners were obliged to pay larger amounts for bridges than if competition had been open.

A Berlin cablegram, dated May 31, stated that the general confederation of metal manufacturers had withdrawn its notices dismissing a large number of workmen on June 2, as the workmen's union in the chief German centers had accepted the employers' terms.

The Iron and Metal Trades

The market for Steel making Pig Irons in the Central West remains stiff, the largest transactions having been the purchase by the Republic Company of an additional block of 10,000 tons of Bessemer Pig for August delivery at $17.25, Valley furnace. In the Chicago district negotiations are pending which may divert two merchant furnaces of the district from Foundry Iron to Bessemer. In the East one structural mill has purchased 15,000 tons of Basic Pig for the second half and a Plate mill has taken 5000 tons at $17.50 delivered.

Outside of some further buying of Foundry Iron by Pipe makers in eastern Pennsylvania the volume of business in Iron for melters has been very light throughout the whole country. The associated Birmingham makers are firmly holding at $14, but outside makers are shading this 25c. In the Central West $16 at furnace is being barely maintained. New England and southern New York are feeling the competition of Buffalo makers. The troubles with the molders in many sections of the country are causing consumers to hold up shipments.

The Shapes and Plates for three Lake vessels to be completed in 1907 have been contracted for, the amount involved figuring up about 15,000 tons. The Shapes, 7000 tons, go to Pittsburgh, and the Plates, 8000 tons, to Chicago. The Plates for the Brooklyn Water Pipe, 15,000 tons, will be rolled by the Carnegie Steel Company.

The largest contract for Structural work, 7000 tons for the Erie Railroad, has been divided between two shops.

Moderate sized orders for Rails for this year's delivery are still being entered. The Baltimore & Ohio Company has placed 4000 tons. For 1907 there have been booked 35,000 tons for the Rock Island, 7000 tons for the Raleigh & Pamlico Sound, and 4000 tons for the Atlanta & North Carolina Railroad. To-morrow the Transcontinental Railway of Canada opens bids for 65,000 tons of Rails.

The leading interest has secured the work of supplying 65 miles of 12-inch Pipe for the Eastern Oil Company and 40 miles of 10-inch for a gas line to Cumberland, Md.

An advance of $2 per ton on Sheets has been made, effective at once. The price of Painted and Galvanized Sheets has been put up 10c. per square.

There are reports that concessions are being made by one very large interest on Bars, thus meeting the demands of consumers who did not secure the 1.40c. basis. The Western Bar Iron Association, consisting of ten independent producers in the Central West, has arranged for the wages scale for the coming year with the Amalgamated Association.

Some pretty good business is coming up, and has been closed in Twisted Bars for concrete reinforcement, both in New York and in Philadelphia.

There has been some heavy business in Old Material in the Pittsburgh district, including from 12,000 to 15,000 tons of Rerolling Rails and about 10,000 tons of Melting Scrap. Heavy offerings in Chicago and in the Eastern markets have caused a sharp decline in Scrap all along the line.

The opening of bids on 40,000 tons of Cast Iron Pipe for Philadelphia has been postponed until the 12th.

Japan has again appeared in our markets as a buyer of Bridge Material and of Rails.

German Iron and Steel makers have been putting up prices rather sharply lately, and reports from England have been more encouraging. It is a significant fact that during the last week a leading interest here has sold to England for delivery during the last quarter of the current year 5000 tons of Sheet Bars, at a very satisfactory price. This is regarded as illustrating the confidence which English buyers have in the continuance of present improved conditions.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	June 6, 1906.	May 29, 1906.	May 9, 1906.	June 7, 1905.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	$18.50	$18.50	$18.50	$17.00
Foundry No. 2, Southern, Cincinnati	16.75	16.75	16.75	14.75
Foundry No. 2, Local, Chicago	18.50	18.50	18.50	17.00
Bessemer, Pittsburgh	18.10	18.10	18.10	15.85
Gray Forge, Pittsburgh	*16.35*	16.35	16.50	15.50
Lake Superior Charcoal, Chicago	19.00	19.00	19.00	17.50
BILLETS, RAILS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	*26.00*	26.00	27.00	23.00
Forging Billets, Pittsburgh	32.00	32.00	32.00	26.00
Open Hearth Billets, Phila	29.00	28.00	29.00	26.50
Wire Rods, Pittsburgh	34.00	34.00	34.00	34.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
O. Steel Rails, Chicago	14.00	14.00	14.00	12.00
O. Steel Rails, Philadelphia	*16.25*	16.25	16.50	15.00
O. Iron Rails, Chicago	21.25	21.25	21.25	17.00
O. Iron Rails, Philadelphia	21.00	21.00	21.00	19.00
O. Car Wheels, Chicago	*18.00*	19.00	19.00	14.25
O. Car Wheels, Philadelphia	*16.50*	16.50	16.75	15.00
Heavy Steel Scrap, Pittsburgh	**15.75**	14.50	15.00	14.50
Heavy Steel Scrap, Chicago	13.50	14.00	13.50	12.00
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.63½
Common Iron Bars, Chicago	1.66⅔	1.66⅔	1.66⅔	1.50
Common Iron Bars, Pittsburgh	1.50	1.50	1.50	1.60
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Beams, Pittsburgh	1.70	1.70	1.70	1.60
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Angles, Pittsburgh	1.70	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	**2.40**	2.25	2.25	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	*1.75*	1.80	1.80	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Copper, New York	**18.75**	18.75	18.62½	15.00
Spelter, St. Louis	5.90	5.85	5.90	5.05
Lead, New York	**6.00**	6.00	5.87½	4.50
Lead, St. Louis	**5.90**	5.90	5.72½	4.40
Tin, New York	*39.65*	41.00	43.50	29.95
Antimony, Hallett, New York	**26.00**	27.00	24.50	10.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	**$3.94**	$3.94	$3.79	$3.74

Chicago.

FISHER BUILDING, June 6, 1906.—(*By Telegraph.*)

With the exception of Rails in the heavier lines and Sheets among the highly finished commodities, the mills are experiencing an easing off in demand and specifications for Sheared Plates have now fallen below mill capacity. Notwithstanding the heavy requirements of Shapes for the building trade the Structural mills are now in position to make fairly prompt deliveries and the Eastern producers are eagerly competing for Western tonnage. In the Iron trade consumers are awaiting developments and are buying to cover concurrent needs only. The anxiety of several of the leading Steel producers to secure the hard Steel angle tonnage of the bedstead manufacturers about to be placed, and which amounts to nearly 20,000 tons annually, reflects the falling off in the consumption of lighter shapes, and as low as 1.45c., Chicago, has been quoted to secure this tonnage. Old Material has suffered a sharp decline, the cheaper grades of Scrap having sold off a dollar a ton during the week and heavy railroad offerings will only tend to further weaken the situation. A slight weakness in Iron Bars has also developed, doubtless largely contributable to the lowering of values of raw material, but the limited buying for nearly two months has also made the manufacturers eager for orders to operate their mills at their capacity. The Steel requirements for three lake vessels were placed this week with the Carnegie Steel Company and the Illinois Steel Company, aggregating 15,000 tons of Plates and Shapes and the specifications will be immediately available and the material will be rolled in the next two months. No additional Rail tonnage for 1907 delivery has been placed with the mills during the week. On Thursday the commissioners of the Transcontinental Railway will open bids at Ottawa, Canada, for 65,000

tons of 80-lb. Steel Rails and 1,545,000 Railway Ties, and it is probable that this tonnage will be awarded an American mill. The Western Bar Iron Association, which comprises ten of the independent manufacturers, made an agreement on June 2 with the Amalgamated Association of Iron and Steel Workers covering the 1906-7 Iron scale, but this adjustment has not yet been accepted by the Republic Iron & Steel Company. This scale, which is practically on last year's basis, will prevail, regardless of the action that this company might take, and the indications are that it will also sign at an early date.

Pig Iron.—Consumers throughout the West continue to defer purchases for future requirements, believing that lower values will soon obtain, and sales are limited to small lots for immediate needs only. Producers, on the other hand, are firmly maintaining prices on a basis that has been prevailing for several weeks, and no indications of weakness are yet apparent. In the South the Republic Iron & Steel Company will shortly turn two of its stacks on Basic for the Tennessee Company's Steel works requirements, and the Southern Foundry Iron output will accordingly be curtailed. At least one and possibly two merchant furnaces in this district will go on Bessemer shortly, providing negotiations now under way with the Illinois Steel Company are concluded, thereby reducing the foundry output of Northern stacks. Local foundries, as well as those in Milwaukee and adjoining territory, are holding up shipments on account of the molders' strike, and it will be some time before the effect of the opposing influences at work in the Pig Iron trade can be felt. There has been no break in the agreement of Southern producers to maintain a basis of $14, Birmingham, for No. 2, although operators not in the pact are making concessions of 25c. and 35c. a ton. Prevailing quotations, f.o.b. Chicago, are as follows:

Lake Superior Charcoal	$19.00 to $19.50
Northern Coke Foundry, No. 1	19.00 to 19.50
Northern Coke Foundry, No. 2	18.50 to 18.75
Northern Coke Foundry, No. 3	18.00 to 18.25
Northern Scotch, No. 1	19.50 to 19.75
Ohio Strong Softeners, No. 1	18.55 to 18.80
Ohio Strong Softeners, No. 2	18.05 to 18.30
Southern Coke, No. 1	18.25 to 18.40
Southern Coke, No. 2	17.65 to 17.90
Southern Coke, No. 3	17.15 to 17.40
Southern Coke, No. 4	16.65 to 16.90
Southern Coke, No. 1 Soft	18.15 to 18.40
Southern Coke, No. 2 Soft	17.65 to 17.90
Southern Gray Forge and Mottled	16.15 to 16.40
Malleable Bessemer	18.30 to 18.55
Standard Bessemer	19.30 to 19.55
Jackson Co. and Kentucky Silvery, 6 %	20.30 to 20.80
Jackson Co and Kentucky Silvery, 8 %	21.30 to 21.80
Jackson Co. and Kentucky Silvery, 10 %	23.30 to 23.80

Billets and Rods.—The demand for Forging Billets in small lots continues fair, although slightly lower prices are prevailing, and comparatively prompt deliveries can be made by the mills. In carload lots Forging Billets are now sold on the basis of $33.50 to $34, f.o.b. Chicago, and Bessemer and Open Hearth Rods are quoted at $34 and $35.

Rails and Track Supplies.—No additional tonnage of Standard Section Rails for 1907 delivery has been booked during the week, although a few electric roads have placed small lots for fall delivery. Light Rail mills, without exception, are booked through July, but the new business offered thus far this month is exceedingly light and would indicate that the heavy buying for this season is at an end. Quotations are unchanged, as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.25c. to 2.35c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $27 to $28; 25-lb., $29; 20-lb., $29 to $30; 16-lb., $30 to $31; 12-lb., $31 to $32, and lighter sections down to 8-lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Structural Material.—Structural Shapes for three lake boats that will be placed on the stocks during the fall were placed with the Carnegie Steel Company this week, aggregating about 7000 tons. The Western Structural mills, notwithstanding the heavy tonnages they have booked, are fast overtaking specifications and fairly prompt deliveries can now be made. The competition among the mills for the hard Steel Angle trade of the bedstead manufacturers is an unlooked for development and reflects the necessity of the large Steel manufacturers to secure all the tonnage offered in order to keep their mills in full operation. It is estimated that the total Western trade amounts to about 20,000 tons annually and heretofore this tonnage has gone to the smaller mills that rerolled Old Rails. As a result of the large mills bidding for this tonnage prices have declined to 1.45c., Chicago, and as yet practically none of the large buyers has covered. We make the following quotations: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.86½c.; larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Plates.—The Illinois Steel Company was awarded the contract this week for the Plate requirements of three lake vessels, amounting to about 8000 tons. This is the largest order that has been placed for several months, and inasmuch as specifications are already available this company's mill will be fully occupied for at least 60 days. Otherwise the Plate market is exceedingly quiet and specifications have fallen below mill capacity. Quotations are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8, up to 60 inches wide, 2.15c. to 2.25c.; Flange and Head quality, 25c. extra.

Sheets.—None of the mills is in position to make deliveries in less than sixty days. Heavy shipments to San Francisco have practically depleted local stocks and mill shipments are not heavy enough to meet current requirements. Effective Tuesday, June 5, the American Sheet & Tin Plate Company advanced both Black and Galvanized Sheets $2 a ton, or 10c. per 100 lbs. No change has as yet ben made in prices from store. Quotations on mill shipments, Chicago, are as follows: Blue Annealed, Nos. 9 and 10, 1.96½c. to 2.01½c.; Nos. 16 and 17, 2.16½c. to 2.21½c.; Box annealed, Nos. 18 to 20, 2.36½c. to 2.41½c.; No. 27, 2.56½c. to 2.61½c.; No. 28, 2.66½c. to 2.71½c.; Galvanized Sheets, Nos. 10 to 14, 2.71½c.; Nos. 17 to 21, 2.96½c.; Nos. 22 to 24, 3.11½c.; Nos. 25 and 26, 3.31½c.; No. 27, 3.51½c.; No. 28, 3.71½c.; No. 30, 4.21½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c. Box Annealed: Nos. 18 to 20, 2.50c. to 2.55c.; Nos. 22 to 24, 2.55c. to 2.60c.; No. 26, 2.60c. to 2.65c.; No. 27, 2.65c. to 2.70c.; No. 28, 2.75c. to 2.80c.; No. 30, 3.15c. to 3.20c. Galvanized, from store: Nos. 10 to 20, 3c. to 3.05c.; Nos. 22 to 24, 3.15c. to 3.20c.; No. 26, 3.35c. to 3.40c.; No. 27, 3.55c. to 3.60c.; No. 28, 3.75c. to 3.80c.; No. 30, 4.95c. to 5c.

Bars.—The settlement of the Iron scale of the Amalgamated Association of Iron and Steel Workers, with the Western Bar Iron Association, at Detroit on Saturday, June 2, insures the operation of these mills during the summer months. As yet the Republic Iron & Steel Company has not met with the association officials, but it is probable that the agreement accepted by the independent manufacturers will be satisfactory to this interest. Some shading on Iron Bars has been reported, notwithstanding the agreement that prevails to maintain a basis of 1.50c., Pittsburgh. Steel Bar tonnage is limited almost entirely to jobbers' specifications, consumers preferring to place their orders with the distributers on the basis of 1.50c. than with the mills direct, on account of the recent concession made the implement trade. We quote as follows: Iron Bars, 1.66½c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Band, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

Merchant Pipe.—The requirements for the building trade continue exceedingly heavy, and jobbers' stocks are comparatively low, although as yet no contracts of importance for future requirements are being placed. Quotations remain unchanged on the basis of 81 per cent. off the list, Pittsburgh, but official discounts on car lots, Chicago, are as follows: Black Steel Pipe, 78.35 per cent. on the base sizes, ⅜ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ⅜ to 6 inches.

Boiler Tubes.—Western manufacturers are specifying freely on contracts placed some time ago when reduced prices became effective. The machinery trade is also buying Seamless Tubing very freely and quotations are firmly maintained. Discounts on base sizes, 2¾ to 5 inches, in car lots, are as follows: Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2½-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—Small orders are numerous, although practically all of the large municipal lettings are now out of the way. It is doubtful if any tonnage of importance will be offered the foundries during the summer months, owing

to their inability to make shipments in less than 60 days. The market is strong and quotations are firmly maintained on the following basis: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Merchant Steel.—The concessions on Shafting have been withdrawn and the market has been established on a firmer basis than at any time this year. Contracts are also being freely made for last half requirements by large consumers. Specifications for special shapes have fallen off to a considerable extent, owing to the curtailment of the output of the plants of implement manufacturers. Prices are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.86½c.; Iron Finish, up to 1½ x ½ inch, 1.81½c.; Iron Finish, 1½ x ½ inch and larger, 1.66½c., base; Channels for solid rubber tires, ¾ to 1 inch, 2.16½c., and 1½-inch and larger, 2.06½c.; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.96½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off on car lots and 45 per cent. in less than car lots, in base territory.

Coke.—The foundry trade is exceedingly quiet and the curtailed melt of many of the shops has resulted in withholding numerous shipments. Consignment Coke from both the Connellsville and Virginia fields is being sacrificed, at concessions of 25c. to 35c. a ton. We quote 72-hour Connellsville Coke on the basis of $5.40 to $5.55, Chicago, and Wise County, at $4.75 to $5. By-Product Coke is held at $5.65 on contracts and $5.80 in car lots, for prompt delivery.

Old Materials.—The market has taken a decided slump, prices being off from 50c. to $1 a ton, on half the items of the list. A fair trading is going on but very little material is finding its way into stock, owing to the fact that still lower values are anticipated. A probable weakening factor in the market is the heavy offering of Scrap by the railroads. In addition to the considerable tonnage offered last week, three lists are out this week, including the Great Northern with 2200 tons, the Santa Fé with 3400 tons and the Wisconsin Central with 400 tons. Bids on nearly all the Wrought Scrap materials in the Illinois Central list last week were rejected as being too low, bringing the tonnage disposed of down considerably. The range of prices paid by large consumers to producers and dealers, per gross ton, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$21.25 to $21.50
Old Steel Rails, 4 feet and over	16.00 to 16.50
Old Steel Rails, less than 4 feet	14.00 to 14.50
Heavy Relaying Rails, subject to inspection, 50 pounds and under	27.00 to 27.50
Old Car Wheels	18.00 to 18.50
Heavy Melting Steel Scrap	13.50 to 14.00
Frogs, Switches and Guards	13.50 to 14.00
Mixed Steel	11.50 to 12.00

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	23.00 to 23.50
Steel Car Axles	18.00 to 18.50
No. 1 Railroad Wrought	13.50 to 14.00
No. 2 Railroad Wrought	12.50 to 13.00
Railway Springs	13.00 to 13.50
Locomotive Tires, smooth	14.00 to 14.50
No. 1 Dealers' Forge	11.00 to 11.50
Mixed Busheling	9.75 to 10.25
Iron Axle Turnings	9.75 to 10.25
Soft Steel Axle Turnings	9.50 to 10.00
Machine Shop Turnings	9.50 to 10.00
Cast Borings	8.00 to 8.50
Mixed Borings, &c	8.00 to 8.50
No. 1 Mill	8.50 to 9.00
No. 2 Mill	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	11.00 to 11.50
Railroad Malleable	13.50 to 14.00
Agricultural Malleable	12.50 to 13.00

Metals.—Copper for spot shipment is practically unobtainable, and the prices quoted below rule strong covering deliveries as far ahead as August. Considerable business is being taken beyond that time at slight discounts. Other Metals are strong in this market with the exception of Spelter, on which there is a slight tendency toward depression. Prices are without change on all Metals. We quote: Casting Copper, 18¾c. to 18⅞c.; Lake, 18⅞c. to 19¼c., in car lots; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 42¼c. to 42¾c.; small lots, 43¼c. to 43½c.; Spelter, prompt delivery, 6.15c. to 6.25c., for car lots; Lead, Desilverized, 6.15c. to 6.25c., for 50-ton lots; Corroding, 6.65c. to 6.75c., for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Cookson's Antimony, 33c., and other grades, 30c. to 31c.; Sheet Zinc is $7.65 list, f.o.b. Lasalle, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 16¾c.; Heavy Copper, 16¼c.; Copper Bottoms, 15½c.; Copper Clips, 15¾c.; Red Brass, 15½c.; Red Brass Borings, 13¾c.; Yellow Brass, 12¼c.; Yellow Brass Borings, 10¼c.; Light Brass, 8¾c.; Lead Pipe, 4¾c.; Tea Lead, 4½c.; Zinc, 4½c.; Pewter, No. 1, 24c.; Tin Foil, 32c.; Block Tin Pipe, 27½c.

Meyers Brothers succeed L. Meyers, Chicago, dealer in Old Metals and Electrical Goods. The firm is located at 286 South Canal street and buys and sells Scrap Metals and Drosses.

Philadelphia.

REAL ESTATE TRUST BUILDING, June 5, 1906.

The Iron and Steel markets may be defined as stubbornly firm. There is no great activity as regards buying, but the scarcity of Pig Iron is indubitable evidence that consumption is maintained at its maximum or very near to it. Furnaces are presumably making a full average output, but metal is so scarce for June and July shipments that it is an inevitable conclusion that the current production is being used as rapidly as it can be got into consumers' yards. The future, however, is a perplexing problem, and it is a fact that considerable uncertainty is felt by many of the most experienced men in the trade. The enormous business which has been done during the past five years (almost without a setback) is so contrary to former experience that there is a disposition to look for a slight slackening up, but there are no signs of any as yet, although it was supposed that the San Francisco calamity would develop something of that character, but if the fact was not so well established it might well be doubted if an earthquake or any other great catastrophe had occurred, as business in almost all lines continues as if nothing unusual had happened. There is a possibility, however, that it may be felt at a later date, and it is this more than anything else that is responsible for hesitancy in regard to the later months. Gigantic efforts were made by the financial powers to save the situation at the time the catastrophe occurred, and it may be that, having tided over the crisis, liquidation will be more leisurely but none the less drastic than would have been possible at an earlier date. It is hardly likely, however, that such a violent convulsion as was experienced a couple of months ago can be overcome without a strain somewhere sooner or late. Crop reports continue favorable, and as a sustaining influence they can hardly be overestimated. Crops are always important, but they were never more so than they will be during 1906. The hesitancy in regard to buying Iron for delivery during the remainder of the year is doubtless due to this fact. With good crops fully assured there will be little or no danger of business falling off, but there are four to six weeks yet before the crops are made, and until then buying is not likely to be very active, although in the meanwhile consumption may be fully maintained.

Pig Iron.—There need be no hesitation in saying that business is good as regards all grades of Pig Metal. Except in Basic there is no real scarcity, although it is just about an even thing in all other grades for June and July shipments. Easier conditions are expected in the near future, as there is nothing to obstruct a full production, but it is about all the furnaces will be able to do to make their deliveries during the next sixty days. It is therefore only natural that prices should be firm. When it comes to the later months, offerings are somewhat more liberal, but it cannot be said that prices are lower or even weak. The course of events during the next month or six weeks will give the market a pretty severe test, however, as during that period new business must be placed or makers will begin to feel uneasy. They are inclined to encourage bids already, but not to an extent that would involve any material change in prices. Concessions of 25 cents per ton for the later months (possibly a little more) would be made from the June or July prices, but the point has not been reached when it can be said that makers are forcing the market, nor is it likely that they will do so, unless there is a slackening in the demand for the earlier deliveries, of which there are no immediate indications. Sales have been of a well distributed character, including almost everything that a furnace can make, from "misfits" to the highest standard known. Mill Irons are probably a shade easier, but at a price everything goes. Basic is the scarcest and strongest article on the list and has sold in a large block at $17.75, delivered, which may be considered an inside price for the third quarter. No. 2 X Foundry commands $18.75 for June and July, but can be done at $18.50 for the later months, the range for the entire list, Philadelphia and nearby deliveries, being about as follows:

No. 1 X Foundry	$19.25 to $19.50
No. 2 X Foundry	18.50 to 18.75
No. 2 Plain	18.15 to 18.25
Standard Gray Forge	16.25 to 16.50
Ordinary Gray Forge	15.75 to 16.00
Basic	17.60 to 17.85
Low Phosphorus	24.50 to 25.00
Malleable	19.25 to 19.50
Bessemer	20.00 to 20.25
Lake Superior Charcoal	21.00 to 21.50

Steel Alloys.—Business is getting into a normal condition and the day of high prices seems to have passed. June or July shipments of Ferro can be had at $85 to $88, and for later months $72.50 to $75. Spiegel is quoted at about $32.50, but a sale of a few hundred tons was made at less than $31, Baltimore.

Steel.—The market has again become active and strong, with prices 50 cents to $1 per ton higher than they were a

week ago. The demand for prompt shipments is very urgent and about $29 is quoted for ordinary Open Hearth Steel and $32 to $33 for Forging Billets.

Plates.—There is a very fair general demand, mills being fully employed, except on Sheared Plates, on which very prompt deliveries can be given. Tank and Boiler work is very active and some new work is expected from the shipyards, so that prospects for the summer and fall months are very satisfactory. The capacity for production has increased considerably, however, otherwise the mills would be swamped with work, the actual output being not far from the maximum as regards tonnage. Prices unchanged, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine	2.13½	2.18½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Extra per 100 pounds.
3-16-inch thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00

Structural Material.—There is nothing but the usual report of a good demand at unchanged prices. Business is in good volume, and apart from the large orders that are taken for skyscrapers, terminals, bridges, &c., there is any amount of miscellaneous demand, which keeps everything in satisfactory condition. Beams, Channels and Angles are quoted at 1.83½c. to 2c., delivered.

Bars.—Reports are somewhat variable, several leading mills having all the work they can do, while others report very little inquiry. Deliveries are well taken, but new business is rather scarce, and will probably continue so until after the midsummer holidays. The general outlook is believed to be good, and prices are steady at 1.63½c. to 1.68½c. for either Steel or Refined Bar Iron.

Sheets.—The demand is well maintained, and as a rule mills are fully employed at about the figures given for some weeks past—namely: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The market is dull and prices are in most cases a trifle lower. No. 1 Steel has sold at $16, and $15.75 to $16.25 is about the range, which holders think is too low in view of the prices paid for Pig Iron. All the same, there is plenty of Material at prices quoted below, which represent bids and offers delivered in buyers' yards:

Scrap Steel Rails and Crops	$16.25 to $16.50
No. 1 Steel Scrap	15.75 to 16.00
Low Phosphorus Scrap	20.50 to 21.00
Old Steel Axles	19.00 to 20.00
Old Iron Axles	25.00 to 25.50
Old Iron Rails	21.00 to 21.50
Old Car Wheels	16.50 to 17.50
Choice Scrap, R. R., No. 1 Wrought	18.00 to 18.50
Choice No. 1 Yard Scrap	16.00 to 16.50
Long and Short	15.00 to 15.50
Machinery Scrap	15.50 to 16.00
Wrought Iron Pipe	13.00 to 13.50
No. 1 Forge Fire Scrap	14.00 to 14.50
No. 2 Light Ordinary	10.00 to 11.00
Wrought Turnings	12.75 to 13.25
Axle Turnings, Choice Heavy	13.50 to 14.00
Stove Plate	11.50 to 11.75
Cast Borings	9.50 to 10.00

The termination of the partnership hitherto existing under the name of Caine & Plitt, Iron and Steel merchants, Real Estate Trust Building, Philadelphia, was announced June 1, John J. Caine having withdrawn. The business will be continued at the former location by George L. Plitt and Howard M. Plitt, under the firm name of Plitt & Co.

John J. Caine, formerly of the firm of Caine & Plitt, Iron and Steel merchants, Philadelphia, will engage in the transaction of a general Iron and Steel and Scrap business, with offices at 1615-1616 Real Estate Trust Building.

W. C. Dickey is opening an office as manufacturers' agent at 608 Chestnut street, Philadelphia. Mr. Dickey represents the Sligo Iron & Steel Company, Empire Iron & Steel Company, United Steel Company, and Bostwick Steel Lath Company in New York and New England and will also be their general Eastern representative in Philadelphia.

Attorney-General Moody states that the decree consented to by the defendants in the action brought in the United States Court in California against what is known as the elevator trust grants a perpetual injunction against violation of the provisions of the Sherman Anti-Trust act, particularly against contracting or agreeing in any manner regarding trade in elevators.

Cleveland.

CLEVELAND, OHIO, June 5, 1906.

Iron Ore.—The movement of Iron Ore down the lakes has been free, due to the fact that lake boats have little other business at present, and the Ore trade is getting the benefit of practically all the tonnage, most of which is running to the head of the lakes light. While the figures have not yet been compiled, the estimates are that the shipments in May from the head of the lakes were about 4,000,000 tons. The freight market has been weak. Shippers, however, have not attempted to break the wild rates, which continue on a parity with contract rates at 75c. from the head of the lakes, 70c. from Marquette and 60c. from Escanaba.

(*By Telegraph.*)—The May Ore shipments from the head of the lakes were 4,304,954 gross tons, compared with 4,619,431 tons for May last year. Up to June 1 total shipments were 5,752,340 tons, compared with 5,814,604 tons to the corresponding date in 1905.

Pig Iron.—Buying of Foundry Iron for early delivery has been as heavy as the supply would permit. Scotch Iron for spot shipment is extremely scarce, and it would be difficult to fill an order for 100 tons. This is the result of heavy buying and the peculiar condition of furnace operations just now. One Cleveland furnace is now running on Malleable, and will so continue for a week or ten days. Another Cleveland furnace was out of blast a few days last week, and is now catching up on its orders. One of the Hubbard furnaces had a little difficulty last week, and was out for a few days. It has resumed, but meantime fell behind on its orders. The Dover furnace will continue on Basic for the better part of the summer. The Toledo furnace is on Bessemer. The above changes have shortened the supply of Foundry Iron. In some instances consumers have been disposed to anticipate shipments. There is no longer any large amount available for third quarter delivery. At present $16 in the Valley is the common quotation, with many furnaces considering the advisability of an advance. In Basic one of the most important producers closed a deal yesterday for the sale of practically all of its uncovered capacity for the remainder of the year. The price is strong, with a good demand at $17 in the valleys. In Bessemer the interests outside of the Steel Corporation are now compelled to pay $17.50 in the valleys. There is very little Iron for sale even at that price. The Coke market is strong at $2.40 to $2.50 at the oven for furnace, and $2.75 to $3 at the oven for the best grades of 72-hour Foundry.

Finished Iron and Steel.—During the past week two contracts were placed with the American Shipbuilding Company for new boats. Both are to be upward of 525 feet in length and both have the broad beam which is becoming popular with the lake vessel interests. It is understood that seven other boats are under consideration and practically under contract with this company, besides business being placed with other companies. The American Shipbuilding Company now has eight boats under contract for 1907. It is understood that the Steel has been purchased. This represents the sum total of the new demand for new Structural Steel in this territory for the present. The Belt Line around Cleveland has started construction work, however. It will require an enormous viaduct. Specifications against old structural contracts are good and the market is strong. Plates are in good demand and in some instances mills selling at a premium are getting a good block of business which the larger mills are not able to take care of. The market is strong at 1.60c., Pittsburgh. In Steel Bars most of the big consumers have covered their needs for the remainder of the year and only the buying of smaller interests remains. The market is strong, therefore, but comparatively quiet. The recent recession in Bar Iron prices has brought out a good buying movement. The tone is much stronger, but the market is far from being bullish, since deliveries can be made inside of three weeks on about any class of order a buyer would be disposed to place. The price holds steady at 1.50c., Pittsburgh. In Sheets an advance in price is expected any day. The report here a week ago was that an advance of $2 had been declared, and some concerns doing business in that line were quoting prices on the higher basis. Most of the buying now is in anticipation of an advance and is accordingly heavy, though not of necessity a gauge of current consumption. The smaller mills cannot buy Sheet Bars at the present price and make any profit on their conversion. Out of stock the prices have not changed from 2.15c. for No. 10 Black, 2.70c. for No. 28 One Pass Cold Rolled and 3.70c. for No. 28 Galvanized.

Old Material.—The Scrap market has been holding about steady during the past week, with fair buying. Prices are unchanged, as follows, f.o.b. Cleveland, gross tons: Old Steel Rails, $14.50 to $15.50; Old Iron Rails (nominal), $22 to $23; Iron Car Axles (nominal), $18.50 to $19.50; Heavy Melting Steel, $15. Net tons: Cast Borings, $8.50 to $9; No. 1 Busheling, $12.50 to $13; No. 1 Railroad Wrought, $16; No. 1 Cast, $14 to $14.50; Iron and Steel Turnings and Drillings, $9.50 to $10.50.

Pittsburgh.

PARK BUILDING, June 6, 1906.—(*By Telegraph.*)

Pig Iron.—In addition to the sale of 10,000 tons of Standard Bessemer Pig Iron made by the Bessemer Pig Iron Association to the Republic Iron & Steel Company for August delivery at $17.25, Valley furnace, we can state that two other large Steel interests, aside from the Steel Corporation, are said to be in the market for upward of 150,000 tons of Bessemer and Basic for last half of the year delivery and a good part of this tonnage will likely be closed within the next week. Bessemer and Basic Iron, for June and July delivery, is scarce, but for deliveries commencing August the supply is somewhat larger. We quote Bessemer Iron for June and July delivery at $17.25 for large lots and up to $17.50 for small lots. We note sales of about 300 tons of chilled Bessemer Iron at $17.75, Valley furnace. Basic Iron is very firm at $17, Valley furnace, and we note a sale of 1500 tons for July and August delivery at that price. The market on Foundry Iron is very dull and prices are weak. We quote Northern brands of No. 2 Foundry at $16, Valley furnace, for good sized lots, and $16.25 to $16.35 for small lots. We note a sale of 500 tons of Northern No. 2 Foundry for June and July delivery at $16, Valley furnace. Forge Iron is also dull and prices are weak. We quote Northern Forge at $15.50 to $15.65, Valley furnace, equal to $16.35 and $16.50, Pittsburgh.

Steel.—The supply of Bessemer and Open Hearth Billets is more plentiful than for some time and prices are easier. We quote Bessemer Billets at $26 and Open Hearth at $27, and note that Bessemer Billets are reported to have been sold at a shade under $26. Sheet and Tin Bars continue very scarce, and are firm at $28, Pittsburgh, for Long Bars and $28.50 for Cut Bars.

(*By Mail.*)

The two events of the week were the purchase of 10,000 tons of Bessemer Pig Iron by the Republic Iron & Steel Company from the Bessemer Pig Iron Association for August delivery at $17.25, at Valley furnace, and an advance of $2 a ton in prices of Black and Galvanized Sheets by the American Sheet & Tin Plate Company, effective June 5. The Republic Iron & Steel Company has now bought a total of 40,000 tons of Bessemer Iron from the Bessemer Pig Iron Association, comprising 10,000 tons for June, 20,000 July and 10,000 August, all at $17.25, at Valley furnace. Several Steel companies, aside from the Steel Corporation, are figuring on the purchase of a very large tonnage of Bessemer and Basic Iron, for delivery over the last half of the year, and some of this Iron will likely be bought before this week is out. It is also certain that the Steel Corporation will need a large tonnage of Bessemer Iron for July and August, and some preliminary figuring has been done. It is estimated that the corporation will need at least 50,000 tons for these two months and probably more. There is a great scarcity of both Bessemer and Basic Iron for spot shipment and small sales of Bessemer for early delivery are reported to have been made as high as $17.75, at Valley furnace. As yet no large quantity has been sold above $17.25, at furnace. Basic is being quoted all the way from $16.85 up to $17.50, at furnace, but the actual market is $17 to $17.25, at furnace, and it is scarce at these prices. The fact that Bessemer Ores are scarce will likely have the effect of creating a spread of $2 a ton or more between prices of Bessemer Pig and Foundry Iron; in fact, at the present time there is a difference in price of about $1.50 a ton in favor of Bessemer. The outlook is that both Bessemer and Basic Iron will be scarce all through the summer months, when the supply is usually larger than the demand. Foundry Iron continues quiet and some consumers are holding up shipments on account of the molders' trouble. Northern No. 2 Foundry is held at $16 to $16.50, at furnace, and there are reports that the lower price has been shaded in some recent sales. There is not much inquiry for Forge Iron, Northern brands being held at about $15.65, at Valley furnace, and on a firm offer this price would likely be shaded. In Finished Iron and Steel the situation is better, the demand for some lines having shown a material increase in the last week or two. The advance of $2 a ton in Sheets is the natural result of the enormous demand and the high prices and scarcity of Sheet Bars. Pipe is now the cheapest article on the whole Iron and Steel list, but there is no probability of an early advance in prices. There has been some heavy buying of Steel Scrap in the past week and prices are decidedly better. Coke is quiet and prices are weak.

Ferromanganese.—There is no trouble now in getting small lots of Ferro for prompt delivery, and prices are easy. We quote 80 per cent. foreign Ferro for June and July delivery at $75 to $80, delivered, Pittsburgh. For delivery over last half of the year, 80 per cent. Ferro is quoted as low as $70, Pittsburgh.

Muck Bar.—We quote best grades of Muck Bar at nominally $28, Pittsburgh. We are not advised of any sales in this market for some time.

Rods.—The market is firm on the basis of $34 to $34.50 for Bessemer and Open Hearth Rods, and $35 for Chain Rods.

Skelp.—New business is very light, but the mills are busy on old contracts, on which buyers are specifying quite freely. We quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

Structural Material.—During the week the American Bridge Company took contracts for about 5000 tons of bridge material, and some large railroad work is pending. Most of the big work being placed is in the East, the local situation being quieter than for some time. However, the leading Structural interests are filled up for this year, and in some cases are not actively seeking work, as some relatively low prices are being made by some of the smaller interests. Deliveries by the mills are now quite satisfactory. Prices are very firm, and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.70c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Dees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—The Carnegie Steel Company has taken an order for about 15,000 tons of Sheared Plates for the Brooklyn Water Works Riveted Pipe. A good deal of tonnage is being placed by the Steel car interests, and the general situation is more satisfactory than for some time. On Universal Plates the mills are from four to six weeks behind in deliveries, but on Sheared Plates very prompt deliveries can be made. There is still some unevenness in prices, especially on the narrow sizes. Official prices, which are some times shaded from $1 to $2 a ton, are as follows: Tank Plates, ¼-inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—Effective June 5, the American Sheet & Tin Plate Company advanced prices of Black and Galvanized Sheets $2 a ton, and Painted and Galvanized Corrugated Roofing 10 cents per square. The demand for Sheets for the past two months has been enormously heavy, and with the high prices and scarcity of Sheet Bars, an advance in prices was the natural result, having been foreshadowed in this report for several weeks. All the mills are more or less behind in deliveries, the leading interest having its product sold up for practically the balance of this year. Jobbers have large stocks, which they bought at lower prices than are ruling now, and whether they will maintain the market on the present basis remains to be seen. The new prices on Black Sheets, one pass through cold rolls, are as follows: Nos. 10 to 12 gauge, 2.10c.; Nos. 13 and 14, 2.15c.; Nos. 15 and 16, 2.20c.; Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.65c., and No. 30, 2.75c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.80c., and No. 30, 4.05c. We quote No. 28 Gauge Painted Roofing Sheets at $1.75 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at $3.10 per square for 2-inch corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

Bars.—Most large consumers of Steel Bars who were not permitted to contract when the 1.40c. price was in force some time ago, now refuse to place their orders at 1.50c., and as a result a good deal of business is being held up. Whether the mills will allow these consumers the same concession granted to the implement makers re-

mains to be seen. The general demand for both Iron and Steel Bars is light, and unless it soon improves some of the Iron Bar mills will be short of work. We quote Iron and Steel Bars at 1.50c., base, half extras, for carloads and larger lots. It is said that some of the Eastern mills are offering Iron Bars in this market at less than 1.50c., delivered.

Hoops and Bands.—Some new tonnage is being placed at the official prices, but the mills are running mostly on old contracts placed when prices were lower than they are now. We quote Steel Hoops at 1.90c., and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Tin Plate.—New business being placed in Tin Plate is usually for small lots, the large consumers having covered ahead some time at lower prices than are ruling now. The Tin Plate mills have a very heavy business on their books, some of the leading interests being sold up for practically the balance of this year. We quote Tin Plate at $3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in ten days, on which price a rebate of 5c. a box is allowed for carloads and larger lots.

Merchant Steel.—A few scattering contracts are still coming in from implement makers, but most of the tonnage being placed is from the general trade and for small lots only. The mills making Shafting have a heavy tonnage on their books, and the market on this material is firm again. We quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x 1½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1¼-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.75c. to 1.80c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The market is firm and the demand is heavy. We quote standard sizes of Railroad Spikes at $2 and $2.05 per 100 lbs., f.o.b. Pittsburgh, the lower price being absolutely minimum.

Spelter.—The demand continues dull and prices are weak. We quote prime Western grades at 5.75c., St. Louis, equal to 5.87½c., Pittsburgh.

Merchant Pipe.—The National Tube Company took the order of the Eastern Oil Company for 65 miles of 12-inch and 40 miles of 10-inch for a gas line to Cumberland, Md. No other large orders have been placed, but on the larger sizes of Pipe the mills are pretty well filled up for several months. The demand for Merchant sizes is active, but the rush of shipments to San Francisco is over. Prices are unchanged, the extreme discount on Merchant sizes of Steel Pipe remaining at 81 and 5 per cent. off to the large trade. Official discounts for carloads, which continue to be shaded one point or more, are as follows:

Merchant Pipe.

	Jobbers, carloads.			
	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	%	%	%	%
⅛ and ¼ inch	72	56	69	53
⅜ inch	74	60	71	57
½ inch	76	64	73	61
¾ to 6 inches	80	70	77½	67½
7 to 12 inches	75	60	72½	57
Extra strong, plain ends:				
⅛ to ⅜ inch	65	53	62	50
½ to 4 inches	72	60	69	57
4½ to 8 inches	68	56	65	53
Double extra strong, plain ends:				
½ to 8 inches	61	50	58	47

Boiler Tubes.—The new business being placed in Merchant and Locomotive Tubes continues heavy and the mills are well filled up. Discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	45	50
1¾ to 2¼ inches	45	62
2½ inches	50	64
2¾ to 5 inches	57	70
6 to 13 inches	45	62

Iron and Steel Scrap.—The Scrap trade has been more active in the past week than for some time, and the complexion of the market has completely changed, due to the fact that two large consumers have come in and bought very heavily, one of Heavy Steel Scrap and Rerolling Rails and the other of Heavy Scrap only. These large sales of Heavy Steel Scrap were made on the basis of about $15.50 and the Rerollers at about $17.50, Pittsburgh. As a result of these heavy purchases the whole market on Scrap is very much firmer and prices are higher. We quote: Heavy Melting Scrap, $15.75 to $16; No. 1 Wrought Scrap, $17.25 to $17.50; Machinery Cast Scrap, $15.75; Bundled Sheet Scrap, $13.50 to $13.75; Old Steel Rails, short pieces, $15.75 to $16; Old Steel Rails, Rerollers, $17.50 to $18; Cast Iron Borings, $8.50; Old Car Wheels, $17.25 to $17.50; Wrought Turnings, $12; Old Iron Axles, $25.50 to $26; Old Steel Axles, $21; Stove Plate, $10.75 to $11; Axle Turnings, $13, all f.o.b. Pittsburgh, and all in gross tons. We note sales as follows: 10,000 tons of Heavy Melting Scrap at $15.50, 3000 tons of Old Steel Rails, Rerollers, at $17.50, 300 tons of Sheet Bar Crop Ends at $15.50 and 600 tons of Axle Turnings at $12.50, all f.o.b. cars, Pittsburgh.

Coke.—Demand for both Furnace and Foundry Coke is very dull and prices are weak. We quote best grades of Connellsville Furnace Coke at $2.30 to $2.35, and 72-hour Connellsville Foundry Coke at $2.65 to $2.75 a ton, at oven.

The San Francisco offices of the Jones & Laughlin Steel Company, which were destroyed by the earthquake and fire, have been temporarily located at 2174 Market street, San Francisco, Cal., to which address all communications for this office should be sent. The company expects to open permanent offices in San Francisco within a very short time.

Cincinnati.

FIFTH AND MAIN STS., June 6, 1906.—(*By Telegraph.*)

Pig Iron.—The only change in the situation that may be regarded as tending toward better times is the fact that there is considerably more inquiry. Nothing in the situation, however, warrants the statement that prices are more firmly established than they have been. While the schedule remains practically unchanged, quotations are slightly weak on such business as comes forward. Several of the larger consumers are reported as feeling the market and apparently willing to purchase heavy tonnage if a satisfactory agreement could be made as to prices, stating that if unable to reach what they considered bottom figures they would merely purchase a month's requirements and wait further developments. Viewing the situation from the furnace standpoint, it looks as though a large percentage of the Southern producers were holding firm at $14 from strictly Birmingham district and were pursuing waiting tactics. As a matter of fact, there appears to be little interest taken by either side, and something startling will be required to awaken deep interest in the situation. The local foundries are said to be well supplied with orders, but are handicapped by being unable to secure force sufficient to handle their product. Southern No. 2 is well established at $13.75 to $14 Birmingham, although we hear of some spot Iron that can be had for $13.50 or even less. Northern brands are fairly firm at $15.75 to $16 for No. 2 at furnace. We learn of one order that was placed for 500 tons of Malleable, said to have been less than $16, Ironton, for Southern delivery. The same buyer is said to be in the market for 500 tons for Western delivery. Another Western consumer is reported to be in the market for about 2000 tons of Malleable for delivery running through the early months of next year. A concern in Chicago is said to be about closing for 1000 tons of Southern analysis Iron for early delivery, which may possibly have some bearing on present quotations. Freight rates from Hanging Rock district to Cincinnati are $1.15 and from Birmingham $3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$17.25 to $17.50
Southern Coke, No. 2	16.75 to 17.00
Southern Coke, No. 3	16.25 to 16.50
Southern Coke, No. 4	15.75 to 16.00
Southern Coke, No. 1 Soft	17.25 to 17.50
Southern Coke, No. 2 Soft	16.75 to 17.00
Southern Coke, Gray Forge	15.00 to 15.25
Southern Coke, Mottled	14.50 to 14.75
Ohio Silvery, No. 1 (8 per cent. Silicon)	21.65 to 22.15
Lake Superior Coke, No. 1	17.40 to 17.65
Lake Superior Coke, No. 2	16.90 to 17.15
Lake Superior Coke, No. 3	16.40 to 16.65
Car Wheel Irons.	
Standard Southern Car Wheel	$23.50 to $24.00
Lake Superior Car Wheel	22.00 to 22.50

Coke.—Prices are fairly strong, but the demand is quiet and the available supply is abundant. We quote the best brands of Virginia and Connellsville Foundry from $2.75 to $3. f.o.b. ovens.

Finished Iron and Steel.—There is a slight falling off in the demand for Structural lines, although all of the mills are said to be crowded for months to come. Bar Iron is quiet. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x ¼ inch or heavier, 1.83c., in carload lots.

Old Material.—The market for Scrap is fairly satisfactory, and there is considerable spot business being transacted. Prices so far as can be ascertained are unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $15 to $15.50 per net ton; Cast Borings, $5 to $6 per net ton; Steel Turnings, $8 to $9 per net ton; No. 1 Cast Scrap, $12 to $13 per net ton; Iron Rails, $21 to $22 per gross ton; Steel Rails, rolling mill

lengths, $15 to $16 per gross ton; Relaying Rails, 56 lbs. and upward, $28 to $29 per gross ton; Iron Axles, $22 to $23 per net ton; Car Wheels, $17.50 to $18.50 per gross ton; Low Phosphorus Scrap, $18 to $19 per gross ton.

Herbert Black, who was secretary of the Southern Pig Iron Association during the life of that organization, has associated himself with the Cincinnati office of the Robert Field Sales Agency. For the past two years he has been with the Cincinnati office of Hickman, Williams & Co.

The Tutwiler Coal, Coke & Iron Company, manufacturer of Vanderbilt Pig Iron, will hereafter be known as the Birmingham Iron Company, and will be represented in Cincinnati territory by the Domhoff & Joyce Company as sales agent.

Birmingham.

BIRMINGHAM, ALA., June 4, 1906.

Pig Iron.—The change in the Pig Iron market for the past few weeks has been so slight as to be scarcely perceptible. Each week bring its regular quota of inquiries for both large and small tonnage, and more or less business is being done all the time. The larger melters have so far declined to pay the price asked, and where they made contracts at all it has been almost without exception for immediate delivery. The small buyers, who never contract for any great length of time in advance of their requirements, are placing their accustomed amount of business, which, together with the small stocks on the furnace yards, is making a very firm market. To illustrate the size of stocks now on hand, the stockhouse of the Sloss-Sheffield Steel & Iron Company at its city furnace was destroyed by fire a few days since, necessitating the banking of No. 1 furnace for a couple of days. When the furnace was started again not a single pig of Iron was on the yard, all on hand having been shipped out during this short suspension. The average stock carried at this plant during ordinary times runs well up into the thousand tons. The No. 2 furnace of this company, which has been undergoing repairs for the past six months and was to have been blown in on the 15th, will probably not be started before July 1, owing to the destruction of the stockhouse.

Old Material.—On certain grades there has been a marked improvement this week. Especially is this true of Machinery Cast, the foundry trade taking large quantities, as at the present price it is more economical to use it than Pig Iron. Good stocks are on hand, and dealers' quotations are approximately as follows per gross ton, f.o.b. cars here:

Old Iron Rails	$19.00 to $19.50
Old Iron Axles	18.50 to 19.00
Old Steel Axles	16.00 to 17.00
Old Car Wheels	17.00 to 17.50
No. 1 Railroad Wrought	16.00 to 16.50
No. 2 Railroad Wrought	15.00 to 15.50
No. 1 Country Wrought	13.75 to 14.25
No. 2 Country Wrought	11.75 to 12.25
Wrought Pipe and Flues	11.75 to 12.25
Railroad Malleable	12.00 to 12.50
No. 1 Steel	12.00 to 12.50
No. 1 Machinery Cast	11.00 to 11.50
Stove Plate and Light Cast	9.00 to 9.50

It has been definitely settled that the Weller Rolling Mill, which was destroyed by fire at Anniston a few months since, will be rebuilt at Gadsden. The estimated cost of the new plant is $100,000, and construction work will begin within the next few days.

Work on the main building of the Payne & Joubert Machine & Foundry Company, which has been in course of construction for several months, is rapidly nearing completion, having been delayed in receiving the Structural Steel. When completed this will be one of the largest foundries in the South, making castings up to 50,000 pounds. The main building, which is a Steel structure with brick covering, is 140 x 400 feet, and is to be equipped with three Pawling & Harnischfeger cranes of 10, 15 and 25 tons capacity; large lathes, boring mills, shapers, planers, and, in fact, every modern tool known to present day practice, all of which have been purchased. In the power house, which is a brick building, 50 x 100 feet, have been installed two 150 horse-power return tubular boilers made by Payne & Joubert, New Orleans, and an 18 x 36 Corliss engine manufactured in this city. The generator, which is being installed by the Northern Electric Mfg. Company, is 200-kw. compound wound type, and all tools will be directly connected, there being no shafting or pulleys in the entire machine shop. It is expected that the plant will be in operation in all departments by July 15, and a large amount of business has been booked for delivery commencing August 1. The specialty will be the manufacture of sugar house machinery castings, but the company will also give attention to the furnace and rolling mill trade and others requiring heavy work.

It is reported that the capital stock of the Bartlett-Tewksbury Machinery Mfg. Company is to be increased to $125,000, and much new machinery is to be added to its present equipment.

The German Iron Market.

BERLIN, May 24, 1906.

Price advances in the German Iron industry have proceeded during the past fortnight at an usually rapid pace. The supposition expressed in my last letter that the advance of 5 marks per ton on Beams would be extended to all forms of Structural Steel proved to be correct. The advance was ordered a few days after that letter was written. This was done by a vote of the Steel Verband; but the mills have already adopted of their own accord a price of 120 marks for Structural Material, which means an advance not of 5 but of 10 marks. The Verband will be appealed to for its approval of the extra advance. According to one report, this extra advance also applies to all half rolled products, like Billets, Blooms, &c.

Other increases in prices have followed one another at such a helterskelter rate that they cannot be all detailed here. The Pig Iron Syndicate has advanced the price of puddling and Steel making grades by 3 marks. At the fortnightly make up of Iron prices on the Düsseldorf Exchange a week ago the following gains in prices were registered: Spiegeleisen and Steel making qualities, 3 marks; puddling Iron (Luxemburg quality), 4 marks; Thomas Iron, 5.50 marks; Wrought Iron Bars, 4.50 marks; Boiler and other Plates of Soft Steel, 5 marks. These advances represent the open market price movement. Dealers' associations are also everywhere putting up prices to make them correspond to recent advances undertaken by the manufacturers' combinations. The Band Iron Association has just raised the price of Skelp 7.50 marks. Many foundry products have also been marked up, and it is expected that they will be still further advanced. Cast Iron columns and other forms of castings used in building were recently raised 5 marks, but makers say that the advance in Pig Iron makes a second upward revision necessary.

Some of the most recently announced prices are as follows: Spiegeleisen, 93 marks; steel making qualities, 70 marks; Thomas Iron, 72.50 to 73 marks; Luxemburg puddling, 56.80 to 57.60 marks; Wrought Iron Bars, 147 marks; Soft Steel Plates, 145 marks; Boiler Plates, 150 marks. These are open market prices.

Owing to the Easter holidays the shipments of the Steel Verband in April were not so large as in March. The movement was 464,559 metric tons (crude Steel basis), which denotes a drop of 63,298 tons, or nearly 12 per cent. from the March figures. The average daily shipments in April, however, were greater than those of March by 648 tons. The make of Pig Iron in April fell to 1,010,789 tons, as compared with 1,051,527 tons in March. The decrease is explained by the shortness of the month and holiday interruptions. The May figures are expected to establish a new record.

The Steel Syndicate's Operations.

The latest report of the Steel Verband, issued May 11, says that the works continue to be very busily occupied, and they can meet the demands of the market only with difficulty. Calls for half rolled goods already ordered continue to come in at an extremely rapid rate; home consumers have completely covered their needs for the third quarter of the year. Inquiries from abroad, too, are coming in steadily, but these are generally rejected in the interests of home consumers. Business in railroad supplies remains very good; some of the mills have engagements running into 1907. The needs of the Prussian State railroads for the fiscal year 1906-1907, which have already been contracted for, are considerably heavier than for the previous year; and the other railroads of Germany will also make considerably larger demands. Business in Rails for mines is lively, and higher prices have been put into force. This is also the case with Grooved Rails, and the mills have full work till far into the fourth quarter. Several large foreign order for Standard Rails and Ties have just been taken at higher prices. Foreign business in mining and Grooved Rails is also quite satisfactory, but foreign competition has somewhat hindered the advance of prices. Sales of Structural Steel are very active; hence, rather long periods for filling contracts must be expected—a circumstance which gives dealers an opportunity to dispose of their stocks. Sales abroad are increasing, and prices are better than could have been obtained hitherto.

In view of the conflicting reports about the business of the Steel Verband in Structural Material for San Francisco, your correspondent appealed directly to the management for information. The answer was evasive as to the amount of orders already taken, but the management adds: "Our Verband is in a position to take orders for large quantities of Beams for San Francisco for immediate delivery." According to recent press reports, the Verband has taken large orders for San Francisco. Freight rates to that city have already been advanced in view of the large shipments expected.

The situation of rolling mills in Upper Silesia is fully as satisfactory as in the Rhenish-Westphalian district. The Silesian Verband published last week a glowing report of market conditions.

New York.

NEW YORK, June 6, 1906.

Pig Iron.—So far as Foundry Irons are concerned this market has been very quiet and is showing a tendency toward greater ease. We note a sale of about 20,000 tons of Basic Pig and some round lots of High Sulphur Iron for Pipe founding. We continue to quote No. 1 Foundry, $18.50 to $19; No. 2 Foundry, $18 to $18.50; No. 2 Plain, $17.50 to $18; Southern No. 1, $18.25 to $18.50; No. 2 Foundry, $17.25 to $17.50.

Steel Rails.—Deliveries in 1906 are now promised on newly offered business only where a special shift can be made or in case a buyer finds that all the deliveries previously arranged for will not be needed. In the past week the Baltimore & Ohio has placed 4000 tons additional for this year; the Indianapolis, Crawfordsville & Western Traction Company, 1500 tons; the Louisville Railway, 700 tons; the Lehigh & Hudson River and the Ann Arbor Railroad, 500 tons each, and the Omaha, Lincoln & Beatrice Railway, 910 tons. The principal new contract for 1907 is that of the Chicago, Rock Island & Pacific for 35,000 tons. The Raleigh & Pamlico Sound has bought 7000 tons for next year; the Atlantic & North Carolina Company, 4400 tons, and Shreveport & Northeastern Railroad 1880 tons.

Structural Material.—The Structural work on the Erie Railroad, heretofore referred to, including a long viaduct over the Genesee River and two bridges of moderate tonnage, has been divided between the American Bridge Company and the McClintic-Marshall Construction Company. The total is about 7000 tons, and the American Bridge Company has been awarded 3000 tons. The latter company booked a total of nearly 70,000 tons of new work in May. In the past week it has also taken a bridge for the Brookville & Mahoning Railroad, requiring about 1800 tons of Steel. For the Baltimore & Ohio it has contracted to build a bridge taking 300 tons. In New York City an addition to the World Building is being figured on, but the size of the improvement has not been definitely decided. If only four stories are added to the rear portion of the building 700 or 800 tons of Steel will be required. There is a plan, however, to run the extension up 12 stories. In the past week the Supreme Court has made a decision permitting Bridge Commissioner Stevenson to accept bids and award the contract for the construction of the Manhattan Bridge over the East River. Suit had been brought to enjoin the making of a contract on the ground that a waste of public funds was threatened because the Commissioner had approved of a wire cable bridge as against eye bar construction. The fabricating works are getting better deliveries on the whole, and the labor situation is working out more satisfactorily for Structural contractors. Buyers still hold off on contracts for the latter part of the year. We continue to quote on mill shipments for tidewater delivery as follows: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles, over 6 inches, 0.10c. extra. Beams and Channels, cut to length, are sold from stock at 2.50c. to 2.75c.

Bars.—Business is confined to moderate lots, without change in price. Both Iron and Steel Bars are quoted at 1.64½c. to 1.69½c., tidewater, according to deliveries and specifications.

Plates.—The market is very quiet. Mills are still well supplied with work and prices are firmly held. Quotations are as follows, at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—The only large letting now in sight is that of the city of Philadelphia, which had been expected to take place June 4, but has been postponed until the 12th. This letting was referred to in this report some weeks ago. General business is fully as good as it has been. It is more a question of delivery at this time than of prices, as manufacturers are still turning business away because of inability to make deliveries as needed. Carload lots of 6-inch pipe continue to be quoted at $30.50 per net ton, at tidewater.

Old Material.—Relaying Rails are in strong demand, with sales at full prices. The demand for Cast Scrap is good, but the price of this class of stock is weakening with other Old Materials. It is difficult to make sales either of rolling mill stock or Steel Scrap without giving concessions to buyers. The rolling mills appear to be out of the market on all items. Nevertheless, railroad lists are going at better prices than dealers are ordinarily willing to give. It would appear that a large short interest is in the market covering for various kind of material whenever opportunty offers. This would seem to indicate better business after a little time, but although some encouraging reports come from Pittsburgh no indications of an improvement are seen here. Approximate prices per gross ton for New York and vicinity are as follows:

Old Iron Rails	$19.50 to $20.50
Relaying Rails	25.50 to 26.00
Old Steel Rails, rerolling lengths	16.00 to 16.50
Old Steel Rails, short pieces	14.00 to 14.50
Heavy Melting Steel Scrap	14.00 to 14.50
Standard Hammered Iron Car Axles	23.50 to 24.00
Old Steel Car Axles	18.50 to 19.50
No. 1 Railroad Wrought	17.50 to 18.50
Iron Track Scrap	15.50 to 16.50
No. 1 Yard Wrought, long	16.00 to 16.50
No. 1 Yard Wrought, short	14.00 to 15.00
Wrought Pipe	12.00 to 12.50
Light Iron	9.00 to 10.00
Cast Borings	8.00 to 8.50
Wrought Turnings	11.00 to 11.50
Old Car Wheels	16.00 to 17.00
No. 1 Machinery Cast	14.00 to 14.50
Stove Plate	11.00 to 11.50
Grate Bars	9.00 to 9.50
Malleable Cast	15.00 to 15.50

Metal Market.

NEW YORK, June 6, 1906.

Pig Tin.—The chief features of interest this week were the statistics published on Friday, showing that visible supplies had increased 1503 tons, compared with the month previous, the visible supply for Europe and the United States on May 31 being 12,607 tons. The stocks in the United States also increased and were 1399 tons, a gain of 612 tons as compared with the previous month. The deliveries into consumption in this country during the month of May were below the average, being 3150 tons. This in a measure was a reflection of the high prices ruling during the month. On this news the London market declined £2 10s., or to £179 15s. for spot. The London market was closed from Friday noon until Tuesday morning, owing to the Whitsuntide holidays, and in the meantime the American market was duller than for the rest of the week, which is saying considerable. Tuesday's cables came over £1 10s. lower, and Tin was sold early in the day at 39.37½c., against 39.50c. on Friday. Further sales were made on Tuesday at 39.25c., 39.20c., 39.12½c., 39.00c. and back to 39.20c. A good business was done, aggregating over 100 tons. As was to be expected, the London market is higher to-day and closes at £180 10s. for spot and £179 10s. for futures. Spot Tin can be had in New York at 39.65c., which advance is due to the higher prices from the other side.

Copper.—The foreign demand is excellent, especially from Germany. The threatening labor troubles, which at one time were believed would lead to serious results later in the month, have been settled. Other foreign consumers are also buying in good volume, as is shown by the 18,640 tons of Copper exported from North Atlantic ports during May. This is the largest exportation during any one month this year. The movement this month promises to be heavy also, as 3655 tons were exported during the first five days. The London market is slightly easier than last week, at £85 15s. for spot, £84 17s. 6d. for futures, with Best Selected held at £89 10s. Quotations are unchanged in this country, spot Lake ruling at 18.75c. to 19c., future deliveries being held at 18.62½c. to 18.87½c. For spot Electrolytic, 18.62½c. to 18.87½c. is asked, futures being sold at 18.50c. to 18.62½c. Casting grades are held at 18.12½c. to 18.50c., for all grades and all deliveries. American business is at present largely confined to filling old contracts; new orders are scarce, as many of the larger consumers are well supplied for June, July and August. Up to the present there has been little or no inquiry for September to December deliveries. It is known, however, that there are a number of projects under way which will call for a good size tonnage late in the year.

Pig Lead.—There is a fair demand and prices are strong, some offerings of foreign Lead being in the market at slightly under 6c. Domestic lead, however, commands 6c. for spot, New York. In St. Louis prices are also slightly higher at 5.90c. The American Smelting & Refining Company continues to quote 5.75c., to govern outstanding contracts, but new business is only accepted at price current on date of shipment. The London market is firm at £16 17s. 6d. There is a good demand for all grades of Lead at the existing prices.

Spelter.—Prices are without change, consumers being able to satisfy their wants in this country at 6.15c. Prompt shipments can be had at 6.05c. Shipments from the West are held on a basis of 5.90c. The market is in a more healthy condition, due to the exports of the metal from this country.

Aluminum.—There is little or no metal to be had for immediate delivery and prices continue to be nominally unchanged, at 35c. for No. 1 Ingots and 33c. for No. 2 Ingots.

Quicksilver.—There is a fair demand, but dealers hold small lots at $41 per flask of 75 lbs. in 100-flask lots. The London market is unchanged, Rothschild's quotations being 7s. 5d.

Antimony.—The market is lower, due to some holders taking profits of long standing. For Cookson's and Hallett's 26c. to 27c. is quoted; other grades, 25.50c. to 26.50c.

Tin Plate.—The demand for Coke Plates is fair, but the Terne Plate market is very dull. At the same time the mills have no surplus on hand and have a considerable number

of back orders. It is interesting to note, however, that not all of the mills are running, owing to the scarcity of Steel. Prices are unchanged, at $3.75, f.o.b. Pittsburgh, and $3.94, f.o.b. New York. The Welsh market is lower, at 13s. 6d.

Old Metals.—The demand for all classes of Old Copper and Brass continues very heavy, but dealers in many cases are not able to supply the wants of their customers. For such contracts as are going the prices given below are ruling. Lead is in excellent demand, as is also Aluminum Scrap. Dealers' selling prices are as follows:

	Cents.
Copper, Heavy Cut and Crucible	18.00 to 18.25
Copper, Heavy and Wire	17.75 to 18.00
Copper, Light and Bottoms	16.00 to 16.50
Brass, Heavy	12.50 to 13.00
Brass, Light	10.50 to 10.75
Heavy Machine Composition	16.50 to 17.00
Clean Brass Turnings	11.50 to 11.75
Composition Turnings	13.50 to 14.00
Aluminum Scrap	26.00 to 28.00
Lead, Heavy	5.45 to 5.60
Tea Lead	5.20 to 5.35
Zinc Scrap	4.90 to 5.00

C. Kirchhoff, special agent of the United States Geological Survey, reports the production of Copper for 1905 as follows, compared with 1904:

Source.	1904. Pounds.	1905. Pounds.
Lake Superior	208,309,130	230,287,992
Arizona	191,602,958	236,627,535
Montana	298,314,804	314,750,612
New Mexico	5,368,666	5,334,192
California	28,529,023	15,367,106
Utah	47,062,889	63,947,261
Colorado, including copper smelters	9,506,944	9,404,830
Alaska	2,043,586	5,000,856
Wyoming	3,565,629	3,500,000
Nevada	.....	250,000
Idaho	2,158,858	2,094,180
South Dakota	100,000	100,000
Washington	663,694	310,930
Eastern and Southern States	15,211,086	14,655,504
Lead desilverizers, &c	100,000	.....
Total domestic copper	812,537,267	901,630,998

The production of Wyoming, Nevada and South Dakota is estimated.

Iron and Industrial Stocks.

NEW YORK, June 6, 1906.

The market has been fairly strong during the past week, with some stocks making good advances. Rumors of fresh deals and consolidations were numerous, but were officially denied whenever they became insistent. Colorado Fuel has been particularly active, advancing from 56¼ on Thursday to 64⅜ on Tuesday of this week. Steel Foundries preferred was also run up quite sharply, advancing from 46¼ on Thursday to 50¼ on Friday, but receding to 46 on Tuesday. The range of prices on other stocks was as follows: Car & Foundry common 41¼ to 42⅜; Locomotive common 69 to 70¾; Pressed Steel common 51½ to 53¾; Republic common 28 to 29⅝, preferred 103 to 104; Sloss-Sheffield common 79½ to 81¾; Tennessee Coal 155 to 158; Cast Iron Pipe common 51¾ to 52¾, preferred 94 to 95⅞; Steel common 40⅝ to 42, preferred 105½ to 106¾. This morning Locomotive common ran up to 72 and Railway Spring common to 56¾. Last transactions up to 1.30 p.m. to-day are reported at the following prices: Can common 7¾, preferred 62¾; Car & Foundry common 42⅜, preferred 103; Locomotive common 72, preferred 116; Steel Foundries common 12, preferred 47; Colorado Fuel 61½; Pressed Steel common 53⅞, preferred 98¼; Railway Spring common 56¾; Republic common 29, preferred 104; Sloss-Sheffield common 80½; Tennesse Coal 157¼; United States Cast Iron Pipe common 51⅞, preferred 95; United States Steel common 41½, preferred 106⅝.

Dividends.—National Enameling & Stamping Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock.

E. & T. Fairbanks has declared the quarterly dividend of $6 per share.

American Car & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable July 2.

American Can Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable July 2.

International Silver Company has declared the regular quarterly dividend of 1 per cent. on the preferred stock, payable July 2.

The American Society of Refrigerating Engineers has recently issued its 1906 year book, containing the names of the officers, members of standing committees, list of members and of the constitution and by-laws. Any one interested can obtain a copy of the book by addressing the secretary, W. H. Ross, suite 806, 258 Broadway, New York City.

Cincinnati Metal Trades Association Dinner.

The regular quarterly dinner of the Cincinnati Metal Trades Association was held at the club house of the Cincinnati Zoological Garden, last Thursday evening. A much larger number than usual attended, representing practically all the machine tool builders of the city. P. G. March, of the Cincinnati Shaper Company, presided and also acted as toastmaster. There was some discussion relative to the new labor bill now before Congress, and it was the sense of the meeting that as an association the members were opposed to any legislation along the line of limiting the hours of labor. As a means to this end, Mr. Hargrave offered the following resolution, which was immediately dispatched by wire to the Congressmen representing this district.

Resolved, That the Cincinnati Metal Trades Association, comprising 70 of the leading manufacturers of this territory, employing 7500 men, is unalterably opposed to any and all legislation limiting the hours of labor.

W. R. C. Smith, editor of the *Practical Machinist*, Atlanta, Ga., was introduced by the president, and made a very entertaining and instructive address on the development of the South. He seemed to think that the New England manufacturers are in some instances receiving a large share of the business that was inherent to this territory, according to natural laws, and that more aggressiveness should be used, especially along the line of machinery for cotton mills. In regard to machinery for machine tool industries and railroad shops, however, Cincinnati is receiving its share of the business. He advised the machine tool builders of the city to send young, aggressive men to that section of the country as agents, that they might be within close touch of the situation. This, the speaker said, has already been done by the New England machine builders with great success. He stated that statistics show that one woodworking plant per day on the average was leaving the North and settling among the timber lands of the South. There is a very pressing demand for labor in this section and he sincerely hoped that the statement, recently made, that one of the great trans-Atlantic lines will establish direct connection between Houston, Texas, and some European port would speedily come to pass, as by that means labor could be more readily supplied to Southern territory and prove of inestimable benefit.

Robert Wuest, acting commissioner of the National Metal Trades Association, gave an interesting account of the strike among the machinists at Indianapolis. He paid splendid tribute to the Winona Institute of Indianapolis, considering it one of the best schools in the country along the line of technical education. He believed that every encouragement should be offered to such schools, as therein seemed to be the solution of the problem that is now confronting both capital and labor in the way of apprentices.

W. D. Sayle, president of the National Metal Trades Association, talked on the success of the association, and how from a very small beginning it had grown to be a power for good, and predicted a more rapid growth in the future than in the past.

Isadore Rauh, chairman of the Committee on Membership, reported receiving five new applications.

OBITUARY.

THOMAS O'CONOR JONES, assistant general manager of the Jones & Laughlin Steel Company, Pittsburgh, Pa., committed suicide June 5. He was the only child of the late George W. Jones, brother to B. F. Jones, was in his thirty-sixth year and had been ill for some time. He was a graduate of Yale, had been in the steel business from his graduation and was regarded as one of the ablest managers in the Pittsburgh district.

C. W. KAYSER, chairman and managing director of Kayser, Ellison & Co., Limited, Carlisle Steel Works, Sheffield, England, died April 30. He is succeeded by his eldest son, Charles William Kayser, who has been an assistant managing director for the past 11 years.

The Western Bar Iron Association Signs the Amalgamated Scale.

At a conference held in Detroit, Mich., last week, between S. C. Leonard, president, and James H. Nutt, secretary of the Western Bar Iron Association, and a Scale Committee of the Amalgamated Association, a settlement of the puddling and bar iron scales was reached. In the scale presented by the Amalgamated committee the second clause of the memorandum of agreement read as follows:

On all mills working iron or steel weighing 130 pounds or over, extra help shall be furnished to the heater; and for each additional 100 pounds additional help shall be furnished, the same to be paid by the company. Extra help shall also assist run-down to charge.

This was objected to by the members of the Western Bar Iron Association and it was withdrawn, the following being substituted:

On all mills working iron or steel extra help shall be furnished to the heater by the company as follows: At 150 pounds or over, one man; at 250 pounds or over, two men, and additional help at 350 pounds or over. Said extra help shall also assist run-down to charge.

In the scale for boiling presented at the conference the men asked an advance of 25 cents a ton when the price of bar iron reached 1 2-10 cents. This was also objected to and the old scale for boiling per ton of 2240 pounds was readopted, as follows, based on actual sales of bar iron, as per conference agreement:

Bar iron, price. Cents.	Wages.	Bar iron, price. Cents.	Wages.
1	$5.00	1 6-10	$6.00
1 1-10	5.00	1 7-10	6.25
1 2-10	5.00	1 8-10	6.50
1 3-10	5.25	1 9-10	6.75
1 4-10	5.50	2	7.00
1 5-10	5.75		

In foot note No. 2 in the boiling scale a slight change was made, the new part being in brackets, as follows:

In order to insure uniformity of iron in boiling furnaces and avoid the increasing custom of running in strong for common iron, thus increasing the hours and work of the boiler, the limit of time for each heat shall be as follows: For a single furnace, one hour and forty-five minutes; for [double furnaces one hour and fifty minutes]; for Siemens furnace one hour and fifty-five minutes; but no heats shall be charged after eight hours and thirty minutes from the regular charging time. When a majority of the furnaces in any mill require more than the time specified to make their heats, due notice shall be given to the boss, in accordance with Article XXXIV of the constitution. By the word majority is meant a majority of the furnaces working hard iron. Inferior coal, which increases the working time beyond that specified above, shall be considered a grievance.

Foot note No. 3 was also slightly changed, the part in brackets being new, this, as adopted, reading as follows:

One dollar per ton extra for dephosphorized iron, [payment to be made for amount charged].

In the scale presented a new foot note, No. 32, was included, which reads:

When a heat of swarth, or a heat of half swarth and half turnings, cannot be rolled in the furnace by reason of brass or other metals in the heat, and it becomes necessary to pull the heat out, 60 per cent. of the charge shall be paid for.

This was also objected to and it was stricken out. Two new foot notes, Nos. 33 and 34, were added and adopted, as follows:

That the company put shields on all furnaces in puddle mills.
That the company shall furnish tap buggies for the puddler.

In the scale presented a new foot note, No. 37, was included, which reads:

When the tubes of a boiler on a boiling furnace blow out after the heat is melted, necessitating the pulling out of the heat, it shall be paid for.

This was objected to and it was eliminated. Another new foot note, No. 36, was adopted, which reads as follows:

When malleable iron swarth, borings or grindings are worked in a boiling furnace alone, or when mixed with other material, the price paid for boiling shall prevail.

In the muck or puddle mill scale no changes were made, except that a new foot note, No. 8, was added, as follows:

On muck or puddle mills in which three (3) crews are employed, three rollers should also be employed.

The scale for piles on boards was adopted without change. The old scale for busheling on sand bottom was readopted, except that a new foot note, No. 7, was added, as follows:

That when either light or heavy scrap is worked without turnings, 20 cents extra above regular price shall be paid. This not to apply to the first 48 hours if turnings are not in stock.

The old scale for knobbling, heating slabs and shingling, and also for bar and 12-inch mills, was adopted, except that in the latter scale foot notes 12 and 13 were changed to read:

The company shall pay fireman on coal heating furnaces, stokers included, except when the production of solid body of steel is 50 per cent. or more in any pay period. Then the company shall pay one-half, except when present practice requires full payment.

That night turn roller shall receive not less than one-half the straight price for rolling and roughing down combined.

The old scale of prices for mills making a specialty of working pipe or skelp from iron or steel was readopted without change.

In the scale presented by the Amalgamated committee it was recommended that a new column for stranders be placed in the guide, 10-inch, hoop and cotton tie mills scale, but this was objected to by the manufacturers, and it was stricken out, the old scale for these mills being readopted without change, except that in the scale of prices for hoop and cotton tie mills a slight addition was made, as follows:

Sizes.	Total.	Roller.	Heater.	Rougher and catcher, each.
2¼ and 2½ channel rub iron and 2½ wagon rub	2.42	1.15	60½	33¼

A new foot note, No. 3, was added to the hoop and cotton tie mills scale, as follows:

On all sizes of pole caps, 13 gauge and lighter, 10 per cent. above band iron prices shall be paid.

In the foot notes under the scale for half ovals, No. 16 was changed to read:

The company shall pay the fireman on coal heating furnaces, stokers included, except where the production of solid body of steel is 50 per cent. or more in any pay period. Then the company shall pay one-half, except where present practice requires full payment.

The scale was signed in conference for the mills composing the Western Bar Iron Association, which are as follows: Shenango Iron & Steel Company, Wheatland, Pa.; Union Rolling Mill Company, Cleveland, Ohio; Empire Rolling Mill Company, Cleveland, Ohio; American Car & Foundry Company, Detroit, Mich.; Lake Erie Iron Company, Cleveland, Ohio; Helmbacher Forge & Rolling Mill Companies, St. Louis, Mo., and Madison, Wis.; Ohio Falls Iron Company, New Albany, Ind.; American Rolling Mill Corporation, Muncie, Ind.; Vincennes Iron & Steel Company, Vincennes, Ind.; Highland Iron & Steel Company, Terre Haute, Ind.; Fort Wayne Iron & Steel Company, Fort Wayne, Ind.; Youngstown Sheet & Tube Company, Youngstown, Ohio; Interstate Iron & Steel Company, East Chicago, Ind.

As yet no arrangements have been made for a conference of the Amalgamated Wage Committee with the American Sheet & Tin Plate Company to arrange the wage scale for the sheet and tin plate mills or with the Republic Iron & Steel Company for the puddling and bar iron scales. Arrangements will likely be made this week for a conference with these two companies. It is not anticipated that any trouble will be met in fixing these, as the scales proposed for the year commencing July 1, 1906, are practically the same as those now in force.

At very heavy cost the Wabash Railroad has completed the connecting link between the Westside Belt Railroad and the Union Railroad of the Carnegie Steel Company at Pittsburgh. It gives the Gould system connection with the Carnegie plants at Homestead and Duquesne. The connecting link is 11 miles long.

Last week John P. McArdle, president, and John Williams, secretary and treasurer of the Amalgamated Association, with a committee from that organization, made an examination of claims presented by the American Sheet & Tin Plate Company for rebate orders, and released from the rebate fund an amount sufficient to meet them.

The Machinery Trade.

NEW YORK, June 6, 1906.

The attention of the trade is centered on the large lists of machine tools on which merchants have already submitted quotations or are preparing their bids. Several of these lists are of great importance in that it is definitely known that orders will be placed very shortly. The Baldwin Locomotive Works is now buying against its list, and the New York Central Railroad has given evidence of early purchases, while the Pennsylvania Railroad has appropriated the money necessary to cover its various specifications. During the week a great deal of activity has been displayed by industrial enterprises, which have placed a large number of orders. The prosperity of the machinery trade is manifested not only by the new plants and extensive additions now under construction, but also by the disinclination on the part of manufacturers to close down their works for repairs. Very little is heard of such a step being taken, but on the contrary steady operation and overtime are the custom. From all indications manufacturers will not have a chance to close their plants for months to come, but when they can it will probably mean an increased demand for equipment, as machinery driven constantly at top speed is bound to show wear. Reports from the West denote the same activity as in this market. In the Chicago district another machine tool list has been issued, with an additional one in prospect.

The recent fire in the New York subway again demonstrated the superiority of steel cars over wooden ones, though they be copper sheathed, and the Interborough Company has definitely decided that hereafter it will use none but steel cars in the subway. Unquestionably steel cars are coming more into use and various roads are adding them to their equipment. This will undoubtedly mean a considerable increase in the steel car equipment in the near future, which will also produce a demand for additional machine tools. In this connection it will be interesting to note that reports from St. Louis are to the effect that the American Car & Foundry Company is going ahead with the reconstruction of its new steel car plant.

A number of New York machinery men are attending the annual meeting of the Air Brake Association of America, which is in session June 5, 6 and 7, in Montreal, Canada. The organization is composed of men interested in the making, selling and use of air brakes and a large number of railroad men are at the meeting. The programme includes the reading of papers along technical lines bearing on the use of air brakes and many interesting social features have been arranged.

The Machine Tool Lists.

Almost daily since our last report the Pennsylvania Railroad has been issuing specifications for additional tools for its shops, and at the present time the sheets in the hands of the trade cover a very large number of machine tools. Taken together, this list is about as large as any that has been issued by a railroad in this territory for some time past. On account of the list being added to frequently, it is almost impossible to estimate the amount of money that the tools will aggregate, but it is certainly very large. This machinery is to be installed principally in the Altoona shops, but some of it is to be distributed at several of the company's other shops along the line, including that at Hoboken. The directors of the road have authorized the expenditure of about $350,000 for additional machine tool equipment for the Altoona shops.

The purchasing department of the Pennsylvania Railroad is now preparing an additional list of tools and machinery, upon which bids will be asked at once. The list covers the requirements of several divisions and is the usual tool and machinery programme annually authorized by the general manager and approved by the Board of Directors.

The New York Central Railroad is now dickering for the machinery to complete the electrification of its road from New York to Yonkers, and it is expected that within a few days some large orders will be placed. This machinery includes that for the main power house and substations, and will foot up to a substantial figure. Considerable of it will be used in the power plant at the new Grand Central Station, which will have a capacity of about 20,000 horse-power. Following closely the closing of contracts for the electric equipment the trade will in all probability be asked to bid on the extensive list of machine tools which is now being made up. The small list of tools which the road sent out a few weeks ago has not yet been closed. This list, which covers machine tools only, amounts to about $30,000.

Orders are being placed by the Baldwin Locomotive Works, Philadelphia, Pa., against the large list of tools sent out a week or so ago. Thus far only a very small portion of the 300 tools which are to be purchased have been arranged for, but it is generally understood that in the course of the next ten days the full equipment will be bought. These tools, which aggregate in value $250,000, will, it is understood, be installed in the Philadelphia plant. Later on it is expected that additional machinery equipment will be purchased for the company's new plant at Eddystone, Pa.

The Western Maryland Railroad has selected a site in the southwest part of Hagerstown, Md., where it will erect a plant, to consist of a machine and erecting shop, boiler and engine house and blacksmith shop. Bids are now being received for the construction of the buildings. The machine and erecting shop will be 100 x 240 feet, constructed of brick and steel; boiler and engine house, 30 x 50 feet; blacksmith shop, 50 x 80 feet. The shops will be under the personal supervision of the superintendent of motive power, I. N. Kelbaugh, who will maintain headquarters in Hagerstown.

International Harvester Company's Improvements.

The International Harvester Company is arranging for equipment for improvements to be made at its Osborn works at Auburn, N. Y. While the detailed plans of the additions have not been definitely decided upon, the company has already placed inquiries for power equipment, and it is expected that very shortly it will be decided upon. The purchases will include a heavy duty engine of from 500 to 600 horse-power and a 12-inch or 14-inch train of rolls. The engine is to replace an old one of lighter capacity. It is expected that before long the company will come into the market for some minor equipment, in order to carry out the general scheme of improvement. The manufacturing department has the matter in charge, and B. A. Kennedy, who is the general manager of that department and has offices at Chicago, is giving it his personal attention, although bids are being received at the Osborn works and the inquiries are also coming from that source.

Equipment is being purchased by the Reading Steel Casting Company to complete an existing plant at Reading, Pa., formerly occupied by the Brylgon Steel Casting Company. The new company is preparing to manufacture small castings and it has been organized with $125,000 capital, with the following incorporators: D. W. Yeckley and W. Conover of New York, and S. J. Wheeler of Roselle, N. J. William D. Sargent is president of the company, J. Turner Moore is vice-president and general manager, and Mr. Yeckley is secretary-treasurer. The company has an office at 114 Liberty street, New York, where Mr. Sargent is located. Orders were recently closed for a 125 horse-power engine and two boilers, to make up the power equipment for the plant, and other equipment is now being acquired. It is expected that the company will be ready for business about July 1.

Plans have been completed by Dodge & Day, engineers, of Philadelphia, for a large new manufacturing plant to be constructed for the Arthur Koppel Company, 68 Broad street, New York, and Berlin, at Homewood, Pa., which is about 35 miles from Pittsburgh. Construction work will be started at once, and the plans contemplate the immediate building of a section of the erection shop, the light car shop, switch shop, service building, office building and a part of the power plant. It is understood that the Arthur Koppel Company expects to manufacture many of the products which have hitherto been imported from Germany, and among other things it is said the company will make electrical railroad supplies and machinery there. The plans call for the ultimate construction of a very extensive plant, and the indications are that the company will make a general line of the railroad materials it now deals in, which include various forms of freight cars, shop cars and the like. H. A. Ellis is now making arrangements for the building of the plant, and he has established an office at 1771 Frick Building Annex, Pittsburgh, Pa. It is thought in the machinery trade that a considerable portion of the equipment will be purchased in New York, as the company maintains extensive offices at 68 Broad street, and transacts considerable of its American business there. A large tract of land has been acquired by the company, and the building arranged for will by no means cover it, so it is expected that it is the ultimate intention of the company to build on a very large scale. The buildings now contemplated will be completed, it is thought, within five months, but the machinery equipment will no doubt be purchased before that time.

The American Asbestos & Fireproofing Company has been incorporated with a capital stock of $16,500,000, to take over the properties of the American Asbestos Company, New York, and the Mark W. Marsden Fireproof Building Material Company, Philadelphia, Pa. The new company will own about 8000 acres of asbestos and mica land in Virginia, a mill at Bradford City, Va., which has a capacity of 100 tons of fiberized asbestos a day, and the Marsden plant in Manayunk, Pa., having a capacity of 200 tons of fireproof building material a day. It is the intention to increase the capacity of the Marsden plant at once and to build

another mill in Virginia, on the line of the Tidewater Railroad, now in course of construction. Webster Brocker, president of the Souther Contracting & Development Company, is to be president of the new company and Mark W. Marsden general manager. A. M. Higgins will be vice-president.

The Shooter Island Ship Yard Company, which has leased Shooter Island, in the Kill von Kull, and taken over the extensive ship building plant there, is planning to build two large dry docks, in addition to the existing plant, and make other additions to the machinery equipment, which when finished will make the plant one of the largest of its kind in the country. The island is surrounded by deep water and has excellent facilities capable of acccommodating vessels of the largest type. The company is already preparing to construct the additional dry docks, and other additions to the general ship building equipment will be made as soon as possible. The company has an office at 409 Produce Exchange and its directors include: Henry P. Davidson, vice-president of the First National Bank of New York; E. F. C. Young, president of the First National Bank of Jersey City; Philip T. Babcock, vice-president of the Colonial Trust Company; R. D. Benson, vice-president of the Tidewater Oil Company; J. F. Fredericks, cashier of the German-American Bank; W. D. Dickey and George B. Case. The officers are: Henry P. Davidson, president; W. D. Dickey, vice-president and general manager; George B. Case, secretary, and J. E. Bennett, treasurer. Mr. Dickey, who is a mechanical engineer, will be in charge of all the details regarding the additions to be made to the company's plant and the company is now prepared to do business. It has a number of large contracts under way.

Plans have been completed and contract has been awarded for the construction of the main building of the proposed new plant which is to be constructed at Bradford, Pa., for the Dresses Mfg. Company, manufacturer of pipe couplings, clamps, sleeves and fittings. The main building will be 180 x 400 feet, of brick and steel. In this building will be installed special machinery, hydraulic and power presses.

The New York Sanitary Utilization Company is preparing to rebuild at once its refuse incinerating plants on Barren Island, which were burned on May 20. The fire loss is placed at fully $1,000,000, a large part of which is machinery equipment, and the company is in the market for a large amount of material. There were about 16 buildings belonging to the company on Barren Island and about 2000 tons of material went through the plant a day. There were about 275 horse-power of engines in the plant, which were practicaly ruined and will have to be rebuilt, and 1000 horse-power of boilers. A great deal of the incinerating and converting equipment was electrically driven and a large amount of conveying machinery was used at the plant. This will all have to be replaced and the buying will be done in this city. The company has offices at 30 Burling Slip, New York, and at 52 Ninth street, Brooklyn. The machinery details will be attended to from the latter office. Some of the equipment is now being purchased.

Under the style of General Representative Company Morris T. Beck and William Bettman have engaged in the business of representing a number of well-known manufacturers of ornamental iron work and structural material in the Metropolitan district and Eastern States. Their factories are located at Jersey City, N. J., Albany, N. Y., Hamilton, Ohio, and St. Paul, Minn. Mr. Beck is well known in the structural trade of the country, having been associated with the American Bridge Company and Milliken Brothers for a number of years. Mr. Betterman has been engaged in the selling of general merchandise in this and foreign markets for many years. The offices of the new firm are located at 290 Broadway, New York.

The city is advertising through the Department of Correction for bids for the construction of a new brick building, which is to house the artificial ice making plant to be located on Hart's Island, and it will not be long before the trade will hear of some machinery requirements from that source. It is understood that the plant is to be a large one and its construction will call for a considerable outlay for power and other equipment. The Department of Correction has offices at 148 East Twentieth street and the bids for the building are to be in on June 12. It is understood that the machinery requirements will be advertised for afterward.

At the meeting of the Executive Committee of the American Motor Car Manufacturers' Association last week, Alfred Reeves was selected as manager of the association. It has been decided to move the office from Chicago to New York and Mr. Reeves will immediately equip offices for the organization in the Spaulding Building, on Forty-second street.

Catalogues Wanted.—Woodin & Little, San Francisco, Cal., dealers in pumps, pipe fittings, brass goods, engines, &c., formerly at 209 to 211 Market street, intend resuming business again in new quarters at 534 to 536 Mission street, where they expect to erect a large building and warehouse, which will be ready for occupancy the latter part of June. The firm desires catalogues and best jobbers' prices from manufacturers of water supplies, pumps, pipe fittings, brass goods, pipe tools, &c.

Philadelphia Machinery Market.

PHILADELPHIA, PA., June 5, 1906.

Business in this territory during the month of May averaged a fairly good volume. There was a gradual falling off in orders as the month advanced and during the closing weeks the amount of business placed was not very extensive. No apprehension, however, is felt as to any extended period of inactivity, the present dullness being looked upon as merely temporary and due to the withholding of orders which it is confidently expected will be largely placed at no very distant date. Builders of tools and machinery continue busy and have in almost every instance sufficient work on their books to keep their plants actively engaged throughout the summer months, and in some cases for a much more extended period, and with only a moderate amount of business coming in, as was the case recently, are still unable to catch up on delayed deliveries to any great extent.

While the amount of actual business closed recently has been small, inquiries have been received by the trade in good number. The requirements of the Baldwin Locomotive Works continue the leading feature in the trade. Estimates are being made by manufacturers and dealers on the list of tools desired, and it is likely that contracts will be closed the present week. It is more than probable that the expenditure for this list will reach $300,000, instead of $250,000, the amount named in our report last week.

The Pennsylvania Railroad has sent out some further lists during the past week, but developments from other railroad sources are slow. Most of the business placed the past week has been of the single tool class, laregly for tools of the medium and smaller sizes.

Shipbuilding plants in this territory continue to take on more business and have their capacities in most cases well covered. In addition to the $1,000,000 contract mentioned in our last report, the New York Shipbuilding Company has received good orders, while the Harlan & Hollingsworth Company at Wilmington, Del., has been favored with contracts for two large vessels. The yards all have a large amount of work on the ways.

The foreign demand remains unchanged. Inquiries for the standard lines of machine tools are not very numerous, although the demand for specialties in various lines continues good. Filemaking machinery has been in particularly good demand recently, as have also some of the lines of power transmission equipment.

Boilers and engines have been the subject of considerable inquiry recently, particularly in the medium and larger horsepowers, but actual orders do not develop as rapidly as manufacturers and dealers desire. The outlook for business in the near future, however, is considered favorable. Second-hand boilers, engines and some grades and lines of machine tools have been in fairly good demand, and some good sales are reported.

Labor difficulties in the gray iron foundry trades in other cities have had no appreciable effect on the trade in this territory. Practically all the foundry plants are being operated to full capacity, and no difficulty is anticipated in so maintaining them. Steel casting plants continue actively engaged, and as a rule they are unable to handle the full amount of immediate business and make reasonable deliveries.

The J. S. Thorn Company, sheet metal worker, Callowhill and Thirteenth streets, has plans out for a new manufacturing building to be erected on Madison street between Twentieth and Twenty-first streets. The building will be 65 x 234 feet, two stories high, with a sheet metal monitor skylight, extending the full length of the building. The company is now taking estimates for the building and is also ready to take bids for the necessary power plant and metal working machinery and equipment.

The John B. Stetson Company has begun work on an eight-story addition to its hat manufacturing plant on Germantown avenue below Montgomery avenue. The building will be fireproof construction and will be used for extending general manufacturing facilities.

The Hub Machine & Tool Company, Inc., has been appointed representative in this territory by James Leffel & Co., Springfield, Ohio, for their line of engines, boilers, both internally fired and ordinary types, and portable sets, having a range in capacity from 6 to 60 horse-power. Samples of these will be carried in stock for demonstration purposes and for immediate delivery when necessary.

The Hess Machine Works is very busy in all departments. Both the foreign and domestic demand for filemaking machinery is good, the home trade being larger than at any time in the history of the concern. Large orders have also been received from Japan and France, while the outlook for business from other foreign countries is particularly encouraging. Recent export shipments by the Hess works include six sets of filemaking machines for Germany and five sets for France. Domestic deliveries in good quantity have also been made recently to a number of file manufacturers.

H. B. Underwood & Co. note a material increase in business, the past month exceeding by over 35 per cent. the same period last year. Inquiries for portable shop repair tools

are being received in large number from the various railroads, as well as individual concerns, and a very satisfactory amount of business is being booked. Portable boring bars have been in the greatest demand, and these, as well as valve seat rotary planing machines, planer attachments and crank pin turning machines, have been shipped to a number of railroads, particularly in the Western territory. This firm announces the admission of Edwin J. Rooksby to partnership. Mr. Rooksby has been with the company for over 20 years and has for a long time served as superintendent of the plant.

The E. H. Mumford Company, manufacturer of foundry molding machines, continues very busy, more orders being on its books than at any previous time. Inquiries are also good and a large volume of business is in sight. Rathbone multiple molding machines, a demonstration of which will be given at the Cleveland meeting of the American Foundrymen's Association this week, are in particularly good demand, as are also power and jolt ramming machines. Deliveries of all calsses of machines have been made recently to various concerns, principally in the Middle Atlantic and Western States; a number have also been furnished local foundries.

The Espen-Lucas Machine Works continues busy. Inquiries for cold saw cutting-off machines and other machine tools are numerous, a fair proportion of which develop into orders, particularly for cold saws and for crank shaft forming machines. Deliveries recently include a number of steel foundry cold saw machines as well as I-beam and bar machines for parties in the New England, Atlantic and Middle Western States.

The Harlan & Hollingsworth Company, Wilmington, Del., has received orders recently for two steel freight steamships for the Clyde Line Steamship Company. These vessels are to be 267 feet long over all, 40 feet beam; depth of hold, 24 feet 6 inches, with a displacement of 2775 tons. They will each have two Scotch boilers, 12 feet 3 inches in diameter, and be equipped with forced draft system. The engines will be single, of the triple expansion type, and will attain a speed of 11½ knots per hour.

New England Machinery Market.

WORCESTER, MASS., June 5, 1906.

Usually the coming in of June marks a falling off of business in the machinery trade, buth manufacturers and dealers feeling the difference in a material way. Thus far this summer absolutely no difference, as compared to the early spring, has become discernible. May was a very exceptional month with the Boston dealers. At least one machinery house had the largest volume of business in its history, and it is safe to state that the other large dealers came very close to a record figure. The usual signs of summer lethargy of business are absent. The dealers expect to find things quieter in July and August, but not by comparison with other recent years. The machine tool builders and manufacturers of other lines of machinery and equipment will not feel any difference, probably, because their orders are booked so far ahead that a few months of even materially lighter demand would not be noticed in the volume of product between now and the autumn, and the falling off should be slight.

The several known instances where the placing of large orders for machine tools will be deferred to next year because of delay in the completion of plans, which is the case with the Boston & Maine Railroad and to an extent with other railroads, are generally welcomed as a nucleus of business for the future. In several of New England's important industrial centers where the manufacture of metal products constitute the chief industry a number of manufacturing concerns may have to give up building this season because of trouble in the building trades. The aggregate of deferred business will reach into a considerable figure.

The engineers of the Boston & Maine Railroad, who are preparing plans for large repair shops to be erected at Somerville, Mass., a suburb of Boston, have not progressed very rapidly in their work because no decision has been reached as to the exact scope of the plan. It is settled that large locomotive repair shops will be erected, of large capacity, probably with facilities for caring for at least 40 locomotives a month, which would mean the expenditure of close to $1,000,000, of which amount at least a quarter would go into equipment. But it is not determined whether car repair shops will be constructed at the same time. The present outlook is that provision will be made for this department of the repair work, but not on a scale to correspond with the locomotive shops. No preliminary work on the ground has begun, and there appears to be little chance that the shops will progress rapidly enough to place the company in the market for equipment before 1907.

The Boston & Albany Railroad is consolidating its repair shops at West Springfield, Mass., the equipment of the works at Rensselaer, N. Y., being in process of installation at West Springfield at the present time. The shops there are large enough for the purpose, some of the buildings having been completed within the past two years. It is not understood that the Boston & Albany will be in the market for any amount of new machine tools this season.

The Boston machinery trade is taking a great interest in the future of the Shaw Machine Company, Lowell, Mass., which is in bankruptcy. There is a possibility that a large number of almost new machine tools may be placed on the market in the process of making a settlement of the company's affairs. In the shops, which have been running only about a year, are tools which cost somewhere about $125,000, at prices considerably below what they would be to-day, for they were purchased before either of the recent advances went into effect. The tools include about a dozen milling machines and many other tools which are out of the market at the present time. Only a small percentage of the equipment is for special work. Practically everything would find a place in any complete machine shop. If it happens that they be disposed of piecemeal within the next month or two there promises to be spirited effort to secure them, for the opportunity to secure tools for immediate delivery would be eagerly sought. In a market where a milling machine cannot be secured for delivery before next year, excepting in very rare instances, the chance of securing nearly new tools would be highly appreciated. However, it is by no means certain that these machines will be sold at all, because reorganization may be effected if creditors and stockholders can agree upon a plan, and if they are sold it may be to a customer who will take the entire plant as it is. It is understood that the receiver will advertise the plant, including equipment, for sale at auction, probably on June 19, by order of the United States Court. This would mean that everything, real estate and equipment, would be sold to one bidder, but the creditors do not propose to let the property go at a figure which would mean a serious loss to them. Several would-be customers have looked over the premises. If the sale is to the creditors, then the possibility of the disposal of the individual machine tools to the highest bidder would become a tangible one. The company manufactures worsted machinery and has large contracts on hand, one of which, for more than $300,000, is from the American Woolen Company. It was the inability to carry on the business on so large a scale with a limited capital that precipitated the failure.

The Corwin Mfg. Company, Peabody, Mass., has acquired the exclusive manufacturing rights for the line of combustion oil engines which was developed and until the present time manufactured by the International Power Vehicle Company, Stamford, Conn. The Corwin Company has also acquired all the machinery, tools, jigs, &c., which formed the equipment of the International Company and will remove them from Stamford to the shops at Peabody, where the manufacture of the engine will be carried on. In addition to this equipment new tools have been purchased to give a still greater capacity to the works. Walter P. Hatch, who has managed the business of the International Power Vehicle Company, will handle the sales of the engine. He will locate at Peabody, and it is his intention to organize a selling corporation, which will probably be known as the International Oil Engine Company. The Peabody shops are amply large enough to take care of the important addition to the Corwin Company's product. The International Power Vehicle Company's plant at Stamford was recently sold at foreclosure sale to James W. Cheney of South Manchester, Conn., for a committee of the bondholders, acting in behalf of Mr. Ijams of the New York banking house of Fiske & Robinson. Exclusive patent rights on the International Company's kerosene engine were disposed of to the Machine Sales Company, New York, which is closely identified with the Corwin Mfg. Company, to which it has made over the manufacturing rights.

A plan for the new subway, which will connect Boston with the neighboring city of Cambridge, has been agreed upon by the Committee on Metropolitan Affairs of the Massachusetts Legislature, and promises to become a law, so that work should begin in the near future. The plan is a comprehensive one, embracing four distinct subways, to be constructed by the Boston Elevated Railroad Company, one to be built immediately, the other three within four years after the opening of the Main street subway, as it is called. The first will be built in Cambridge under Main street, Massachusetts avenue, Quincy square and Brattle street to Brattle square. Within four years the elevated may build a subway from the Main street subway at Central square to some point near the Cambridge street bridge in Brighton; a two-track subway in Cambridge street from Lechmere square or Bridge street to Harvard square, and a Webster avenue subway from the Cambridge street subway to a suitable connection with the elevated or surface tracks in Cambridge or Somerville. Rights to build revert to the city in case the elevated fails to take advantage of the act within the four years specified.

The interesting but unconfirmed rumor comes from Bath, Maine, that Charles W. Morse, owner of large steamship interests, is negotiating for the purchase of the Bath Iron Works in that city. The report has it that the acquisition of these large shipyards is a part of the plan of consolidating

the Morse steamship lines, providing means of making repairs as well as the building of ships. The Bath Iron Works has taken the contract for building a steamship for the Eastern Steamship Company, which will cost $450,000. The ship will be 335 feet long, 40 feet molded beam and 17 feet deep, and will be equipped with steam turbines to drive three screws.

The Ives Mfg. Company, Bridgeport, Conn., manufacturer of mechanical toys, is contemplating the erection of an additional factory building, to be three stories and 50 x 150 feet. It is not wholly decided, however, whether or not the building will be erected this season.

The Fitchburg Steam Engine Company, Fitchburg, Mass., is to erect a one-story building, 40 x 70 feet, which will be devoted to storage purposes. The building will relieve the floor of the main shop building, which will permit of putting in more tools and will give more room for the erection of engines. The company is not prepared to give a list of the new tools which will be needed.

Wilcox, Crittenden & Co., Middletown, Conn., manufacturers of marine hardware, are to erect an addition to their works, to be 60 x 100 feet and four stories. The building will be of either brick or reinforced concrete, the decision to be governed by the price. The additional space will be devoted to machine shop purposes. Work will be pushed forward that the shops may be occupied at the earliest possible date.

The Standard Company, Torrington, Conn., manufacturer of spokes, nipples and other bicycle goods, is planning to erect a considerable addition to its works, but announcement of the detailed plans will not be ready for several weeks.

Cincinnati Machinery Market.

CINCINNATI, OHIO, June 5, 1906.

It seems as though there has been a very decided increase in new business, and deliveries are becoming more and more unsatisfactory. A large percentage of the shops have enough work contracted for to keep them in full blast until the approach of cold weather, which at this ratio would make this year the largest in the history of the machine tool industry. There is one peculiarity about the situation that appears to be in a measure unsolvable, and that is the manner with which foreign demand continues to come forward. Month after month with the regularity of clockwork these orders have been coming, and even with the immense volume of machines that has gone abroad to satisfy this demand there is no appreciable change in the situation from what it was the first of the year. This in itself has had everything to do with conditions as we find them to-day, and should the time come when a perceptible decrease should be noted, it will then be readily seen that the heavy business done during the year 1906 was for the most part attributable to orders coming from other sources than at home.

According to official statistics compiled for the year 1905 a great gain is noted along the line of foundry and machine shop products. These statistics report 159 establishments with a total capital of $12,947,438, and employing 6637 men. The cost of materials used was $4,571,259, while the value of the product was $12,532,244, a decided increase over the year 1900.

William Finch, secretary of the Industrial Bureau, states that Abendroth Bros., Port Chester, N. Y., among the largest and oldest manufacturers of soil pipe and large manufacturers of stoves, hot water heaters and house heating steam boilers, are looking for a site for a branch factory, and hopes that they may come here. This firm has been through a systematic process of selecting a location from 30 or 40 cities, and from this number has selected five as worthy of a personal visitation—namely, Niagara Falls, Zanesville, Ohio; Louisville, Ky.; Huntington, W. Va., and Cincinnati. Benjamin Mills, treasurer, and S. S. Knight, superintendent, were here last week, and went over the ground thoroughly, going from here to Louisville. They will return home to-morrow, and will settle the matter of location within the next ten days. The Bureau feels that, notwithstanding the fact that several of the cities mentioned have made offers of free sites, which was also done here, no city mentioned is in a position to offer more in the way of natural advantages and facilities for economic manufacturing and distributing than Cincinnati. A site of 10 acres near the new plant of the Graham-Phillips Horseshoe Company has been offered, which it is hoped will be selected. This will mean an original investment of about $1,000,000.

There has been so much said about the smoke nuisance in this city that public sentiment has become fully aroused and a thorough research is being made in the endeavor to secure smoke consuming devices that may be entirely practical, and it appears that concerns having these devices on the market might find a ready sale for such as would fully meet the requirements of the cases under consideration.

The plant of the Foos Gas Engine Company at Springfield suffered quite a serious damage by fire last Friday.

Chicago Machinery Market.

CHICAGO, ILL., June 5, 1906.

Western manufacturers of upright drills report a continued heavy demand, and almost without exception are from two to three months behind on deliveries. The recent advance has had no apparent effect on the volume of business, time of shipment alone being the main consideration covering the placing of orders. Other tool manufacturers are likewise engaged, and the small motor trade which all the electrical manufacturers in this district are enjoying reflects the activity in the machine tool trade. The Parlin & Orendorff Company, Canton, Ill., has just issued a comprehensive list of tools to be used in increasing its output of agricultural implements, and the American Radiator Company is buying heavily for the new plant it has under erection in England. A Western railroad list has just received directorate confirmation, covering $125,000 worth of equipment, and will be issued in a few days.

Parlin & Orendorff Company's Machinery Requirements.

The Parlin & Orendorff Company, Canton, Ill., is in the market for the following list of machinery: One 24-inch swing lathe, 12-foot bed, hollow spindle, taper attachment; one 24-inch swing lathe, 8-foot bed, hollow spindle, taper attachment; one small double end punch with 9-inch throat, 1½-inch hole in ½-inch iron; three 90-pound spring hammers; one bolt header, capacity to make ¾-inch bolts; one bulldozer, No. 4, belt driven, with movement of cross head 18 inches; face of cross head, 45 x 7 inches; one double end punch, with capacity for cutting 2¼-inch round steel, or 8 x 1⅛ inch flat, 15-inch throat; one fan, capacity for furnishing air for two 10-ton malleable furnaces; one mill for grinding paint (iron), grinders 18 inches in diameter, capacity 600 pounds per day, interchangeable grinders; one crank shaper, 20-inch stroke, with tilting table, automatic down feed; one special double end punch for punching tire, taking 18-inch tire overhead, capacity one ½-inch hole in ½-inch iron; one press for blanking 14 x 20 14-gauge steel; one tire rolling machine, capacity for rolling and concaving 5 x ⅜ flat tire.

The American Radiator Company, Chicago, it is understood, is still making purchases of machinery for the new plant which is being built at Hull, England. Practically all of the machinery is being purchased in this country, one order for foundry equipment recently placed going to a St. Louis company. The pattern equipment is being made in one of the Radiator Company's domestic plants.

The Colorado Midland Railroad Company, C. N. Davis, purchasing agent, Colorado City, Col., is in the market for a combination tool and drill grinder. This machine must have two carborundum cutting wheels, one wheel to be used for grinding different lathe and planer tools, and the other wheel, on the same stand, to grind flat and twist drills.

The Mechanics Machine Company, Rockford, Ill., manufacturer of drills and special machinery, has outgrown its present quarters, and inasmuch as there is no available space on the water power for further extensions it has been decided to erect a new plant in the south end of the city. It will be of brick and heavy mill construction throughout, 64 x 250 feet, with an L 40 x 55 feet. The contract for its erection will be placed shortly, and some machinery, including lathes, planers, &c., will also be purchased. A power plant will also be included, which will contain a 50 horse-power boiler and engine. All of the machinery in the existing plant is to be removed to the new location, and as the company's capacity is to be practically doubled a large number of new tools will be required.

The American Insulated Wire & Cable Company, 241 South Jefferson street, Chicago, expects to move about July 15 to a factory which is being erected for and will be leased by it at Twenty-first and Morgan streets. The plant will provide about 40,000 square feet of floor space, and will increase the output of insulated wire at least one-third. The company will purchase 100 additional braiding machines.

The Chicago Screw Company, 2 North Canal street, Chicago, is practically doubling the capacity of its factory, which is located at Fillmore street and Homan avenue, by the erection of a four-story building, 60 x 140 feet. The automatic screw machines which will be installed are of a special design, and will be made in the company's own shops.

The C. P. & J. A. Lauson Company, manufacturer of gasoline engines and air compressors, Milwaukee, Wis., will, it is stated, erect a complete plant at North avenue and the Chicago, Milwaukee & St. Paul tracks. It will be two stories and cost $30,000.

The American Injector Company, Detroit, Mich., of which John Trix is president and Hiram M. Keeler secretary, will erect a three-story main building, 60 x 130 feet; foundry, 40 x 140 feet, and power house, 40 x 40 feet.

The Barnard & Leas Mfg. Company, builder of special mill and elevator machinery, Moline, Ill., anticipates the erection of a new foundry, together with power house, pattern house, pattern shops, core ovens, &c. Plans have not

yet been begun, but will probably be completed within the next 60 days.

A Western branch has been opened at 40 Dearborn street, Chicago, by Franklin Williams, manufacturer of engineering specialties, whose principle offices are located at 39 Cortlandt street, New York. The Chicago headquarters are managed by J. M. Dickinson, who for a number of years was Mr. Williams' assistant in the metropolitan field.

Cleveland Machinery Market.

CLEVELAND, OHIO, June 5, 1906.

Cleveland machinery dealers say that the demand for tools continues about the same as it has for two or three months back. One or two dealers say that the advance in prices which was announced the first of last month had the effect of causing a temporary lull in the demand, but it appears that the majority of people who have been buying have been forced to do so in order to take care of increased business that was being offered them. The most discouraging feature of the situation is the shortage of stock and the increasing inability of manufacturers to make deliveries. The delivery situation appears to be growing worse with every report from the tool builders. Dealers say that lathes of popular sizes cannot be delivered before October or November, while many sizes of milling machines and grinders are practically out of the market, deliveries next February and March being the best promised.

The automobile industry continues to furnish local dealers and manufacturers an immense amount of business. The prospects for the sale of pleasure vehicles for next year looks brighter than ever before, despite announcements made by nearly all the makers that prices are to be increased for 1907. The commercial vehicle branch of the business, heretofore untouched by manufacturers in this district, is to be developed by several makers next year, and extensive additions to factories and large increases of equipment are now being arranged for.

The Winton Motor Carriage Company is erecting a building 700 feet long and 35 feet wide as an addition to two of the present buildings, and another story is to be added to the buildings referred to. The company has been buying a large amount of new machinery within the past few weeks and there is a well founded report that it will take up the manufacture of commercial vehicles in another year.

The White Sewing Machine Company's new automobile plant is well under way and a portion of it will be placed in operation early in the fall. The company has been making extensive purchases of machinery for both the automobile department and the sewing machine department. The present factory will be used entirely for sewing machine work as soon as the new plant is completed and the capacity of the department will be largely increased. This company has been doing considerable experimental work with heavy steam trucks, several experimental machines being in use in Cleveland, and it is intimated that this branch will form an important part of the company's product when the new plant is fully in operation.

The DeLuxe Motor Car Company, recently formed in Toledo, has requisitions out among the machinery people for a complete shop equipment of automobile machinery aggregating nearly $200,000. The list includes numerous lathes, planers, milling machines, boring mills, multiple drills, gear cutters, and other tools of the latest high speed type. This company has recently been formed with a capital stock of $750,000. It has been practically decided to locate the plant on the Toledo Terminal Belt Railroad a short distance from Toledo. Plans for the factory have been completed by Architect George S. Mills of Toledo and will have a capacity for 250 automobiles the first year and 500 the second. The first year the company will build nothing but high grade touring cars, but later it will build a line of delivery wagons and trucks. For temporary work the company has leased the Kirk automobile plant, owned by the Consolidated Mfg. Company, and it has a large force of men at work getting out models and tools. George M. Verity of Middletown, Ohio, is president of the company; F. M. Keeton, formerly with the Pope Motor Car Company, is vice-president and secretary; F. A. Sheplar, formerly of the Pope Motor Car Company, superintendent, and John E. Lochter, Frank S. Davis, John E. Herzog, W. F. Meeks and John Guenter, mechanical engineers, all of whom have been with the Pope Motor Car Company. The company has opened general offices in Toledo.

The Chandler & Price Company, manufacturer of printing presses, has awarded a contract for the erection of a brick and steel building four stories high, 92 x 132 feet, to cost about $50,000. The company will increase its shop equipment.

The Warden Tool Company is preparing to erect a new plant on Scranton avenue. The building will be one and two stories high and will be 80 x 317 feet, costing $50,000.

The Falls Rivet & Machine Company, which has recently acquired the Nicholson File Works at Kent, Ohio, to take the place of the factory at Cuyahoga Falls recently destroyed by fire, has been buying considerable new machinery for the Kent factory, and other machinery will be purchased in the near future. The Kent plant consists of six buildings, one 46 x 252 and three stories high, and the others considerably smaller. It is the intention to erect another building, 60 x 150 feet. The offices of the company will remain at Cuyahoga Falls, where the main plant, which was not injured by the fire, is located.

The city of Niles, Ohio, is receiving bids for a large steam engine and direct connected alternating current generator, together with other apparatus for the municipal lighting plant.

The Mayo Lifeboat Company, Conneaut, Ohio, has completed plans for the erection of a new plant in that city, to be located between the Lake Shore and Nickle Plate tracks and having track connections with both. The main shop will be 60 x 250 feet, two stories high, with a crane shaft 20 feet wide and 42 feet high through the center. There will also be an office building, 28 x 48, warehouse, 41 x 44 feet, and a power plant in which will be installed boiler, engine and generator for operating the machinery. Each machine will be operated by an individual motor. The company will manufacture steel lifeboats.

Government Purchases.

WASHINGTON, D. C., June 5, 1906.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until June 12 for a quantity of supplies for the Eastern navy yards, including a cutting off machine.

Pumps are included in the supplies for the Mare Island and Puget Sound navy yards, bids for which will be opened at the Bureau of Supplies and Accounts, Navy Department, Washington, on June 26.

Bids will be received at the office of the United States Engineer, Pittsburgh, Pa., until June 25, for compressed air machinery for new lock, No. 5, Monongahela River.

The following bids were opened May 29 for supplies for the navy yards:

Bidder 7, Berry & Aikens, Philadelphia, Pa.; 14, Geo. F. Blake Mfg. Company, New York; 18, Bridgeman Bros. Company, Philadelphia, Pa.; 31, A. S. Cameron Steam Pump Works, New York; 33, Chicago Pneumatic Tool Company, New York; 38, M. T. Davidson, Brooklyn, N. Y.; 40, Drew Machinery Agency, Manchester, N. H.; 41, Electric Launch Company, Bayonne, N. J.; 50, Frye, Phipps & Co., Boston, Mass.; 51, Fairbanks Company, New York; 56, Wm. Geiger, New York; 65, Handlan-Buck Mfg. Company, St. Louis, Mo.; 71, Hisey-Wolf Machine Company, Cincinnati, Ohio; 79, J. B. Kendall, Washington, D. C.; 96, Manning, Maxwell & Moore, New York; 98, Montgomery & Co., New York; 118, J. B. Roache, Brooklyn, N. Y.; 136, Sherman-Brown-Clements Company, New York.

Schedule No. 545.

Class 37. Three improved roller tube expanders—Bidder 40, $117; 65, $142.50; 79, $109; 96, $126.50; 118, $140.50.

Schedule No. 539.

Class 174. One boiler test pump and gauge—Bidder 7, $69.70; 18, $130; 96, $32.50; 98, $26.

Schedule No. 541.

Class 191. Two electric motors, and a quantity of electrical suppplies—Bidder 33, $7628.80; 41, $5988.40; 56, $6817.

Class 197. One portable electric drill—Bidder 33, $67.50; 50, $72; 51, $72; 71, $72; 96, $72; 98, $58; 136, $64.

Schedule No. 542.

Class 213. Six simplex pumps—Bidder 14, $390; 38, $240; 40, $327.60.

Class 214.—One vertical direct acting single piston steam pump—Bidder 14, $391.50; 31, $200; 38, $240; 40, $450.

Manning, Maxwell & Moore, New York, have been awarded contract for one lathe at $1450 for the Isthmian Canal Commission under opening of May 18, circular No. 307A.

The following awards have been made for supplies for the navy yards, bids for which were opened May 22:

Manning, Maxwell & Moore, New York, class 22, one back geared engine lathe with direct connected motor, $885; class 32, one upright drill press with direct connected motor, $445; class 40, one rotary slitting shear, $475.

J. A. Fay & Egan Company, New York, class 30, one molding machine, $805.

James Clark, Jr. & Co., Louisville, Ky., class 31, one drill press, $375.

Smith-Courtney Company, Richmond, Va., class 33, one Perkins forming press, $2585.

Niles-Bement-Pond Company, New York, class 35, one Bement steam hammer, $3650.

E. W. Bliss Company, Brooklyn, N. Y., class 37, one Bliss inclinable trimming press, $750.

S. M. Price Machinery Company, Norfolk, Va., class 42, one cold metal sawing machine, $1450.

General Electric Company, Schenectady, N. Y., class 84, one 12 horse-power motor, $555.

Berger-Carter Company, San Francisco, Cal., class 90, two automatic motor hoists, $478.

Trade Publications.

Graphite Paint.—Joseph Dixon Crucible Company, Jersey City, N. J. "Spring Painting" is the title of a neat little folder issued by this company. In it are convincingly set forth the virtues of Ticonderoga flake graphite and silica graphite paint, together with a few words as to the necessity of preserving wood, metal and other building materials from deterioration by a liberal use of paint.

Dies.—Landis Machine Company, Waynesboro, Pa. Folder. Refers to the Landis die, among the advantages claimed for which are that it possesses great durability, has positive lead, correct clearance, a permanent throat, requires no annealing, hobbing or retempering, has a wide range for special work, that same chasers will cut right or left hand threads, and that no wearing parts are exposed to chips or scale.

Fuel Saving Furnaces.—Standard Car & Foundry Company, Farmers' Bank Building, Pittsburgh, Pa. Catalogue; size, 7 x 10 inches; pages, 32. Commands the interest at the outset by some very striking claims concerning what may be accomplished by the installation of the Pittsburgh fuel saving furnace. Following a discussion of these claims are illustrations showing elevations and sections of various boilers equipped with the furnace. A number of half-tones show places where installations have been made. A large number of testimonial letters are incorporated and a considerable amount of useful information.

Second-Hand Machinery.—Charles E. Dustin Company, 11 Broadway, New York City. Stock list of electrical and steam machinery for central stations, street railroads and isolated plants.

Trolleys and Hoists.—H. F. Frevert, 18 Dey street, New York. Folder. Illustrates, briefly, describes and lists a line of I-beam trolleys, channel trolleys and flat rail trolleys for overhead tramways, from which may be suspended multiple gear chain hoists or hoists of other varieties.

Steam Boilers and Plate Work.—S. Freeman & Sons' Mfg. Company, Racine, Wis. Catalogue No. 30. Size, 5¼ x 7⅝ inches; pages, 112. A general catalogue dealing with that branch of the company's business which has to do with steam boilers of all kinds, steel plate work, steel tanks, self supporting steel chimneys, smoke connections, smokestacks, water works stand pipes, water works mains, water works pipe, &c. In many cases tables are given covering the sizes of stock goods. Information of value is scattered through the book in appropriate places. A circular from the same company contains sectional illustrations of the Bonum-Freeman water tube boilers manufactured by this company.

Rope Transmission Equipment.—Geo. V. Cresson Company, Philadelphia, Pa. Booklet. Consists in the main of a textbook treatment of the subject of rope driving. The only reference to the company in connection with it is found on the fly leaf, which lists the lines in which the company engages, among them being the manufacture of power transmitting machinery and rope transmission apparatus. The body of the booklet sets forth the advantages of rope driving when applied to the work to which it is peculiarly adapted, and a discussion is given on the two systems of rope driving—namely, the multiple or English and the continuous, or American, which shows under what conditions one is to be preferred to the other. Numerous diagrams are given of typical drives. The matter of the proper form of grooves for the most efficient transmission is dealt with at some length.

Steam Appliances.—Crosby Steam Gage & Valve Company, 16 Dey street, New York. Circular. A condensed presentation of Crosby standard steam appliances, including pressure or vacuum gauges, ammonia, hydraulic, altitude, combination water works, compound pressure and vacuum and standard test gauges, pop safety valves, water relief blow off and spring seat globe and angle valves, pressure recorders, steam indicators, pressure gauge testers, revolution counters, Branden rubber pump valve, and single bell chime whistle.

Locomotive Cranes.—Browning Engineering Company, Cleveland, Ohio. Bulletin No. 23, superseding No. 19. Subject, the Uses of Locomotive Cranes. Profusely illustrated pamphlet of 62 pages, showing locomotive cranes in various kinds of service, including railroad, power house, gas companies', contractors', ship builders', sand companies', logging companies', stone companies' and iron, steel and foundry companies' services. One of the interesting applications is the use of a locomotive crane in connection with lifting magnets. An extensive list of locomotive cranes recently sold is given.

Engine Stops.—Locke Regulator Company, Salem, Mass. Mailing card. Bears a reproduction of a photograph showing the result of a fly wheel wreck which would have been prevented if the engine had been equipped with a Locke engine stop.

Pipe Bending Machines.—Pedrick & Smith, Church lane and Reading Railway, Germantown, Philadelphia, Pa. Circular. Illustrates and describes a machine for bending all kinds of pipe and also adapted by means of special formers for bending light angles, flats and T-bars. This machine was described in *The Iron Age*, December 21, 1905.

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HARDWARE

THE Senate, after a debate of special interest to the taxpayers of the country and more particularly to the retail merchants, has passed the post office appropriation bill, with several amendments, which were not proposed by the Senate committee, but which were offered on the floor and accepted by those in charge of the measure. While the bill as passed is upon the whole satisfactory and is a much more conservative measure than it was feared would be adopted, nevertheless it contains two or three features which should be carefully observed by all who are engaged in opposing legislation in the interest of the catalogue houses. These are referred to at length in the interesting letter of our Washington correspondent, given on another page. One of these amendments is as follows:

"The Post Office Department shall make no regulation which will prevent any postmaster or any rural route carrier from furnishing a Senator from a State the names of those to whom he delivers mail in that State, nor to a Representative or Delegate the names of those to whom he delivers mail within the district or territory so represented."

The possibilities of this change in the law should not be ignored. It means practically not only that any Senator or Representative, but also any one of the 700 or 800 clerks who are now acting as secretaries to Senators and Representatives, may secure from the Post Office Department complete lists of all the patrons of the routes in the respective districts represented by their employers. No such comprehensive machinery for gathering lists of names has ever before been devised. The temptation thus placed in the way of several hundred young men earning comparatively small salaries is such as to justify very serious apprehensions. If a mail order house desires to secure a complete list of the patrons of the rural routes of an entire State it can procure it if it can induce one of the secretaries of the two Senators to furnish a copy of his private list—for a consideration. Such a list would have a high cash value, some of them being worth more than $1000 each, or about as much as the annual compensation of a Congressional clerk. Employees willing to traffic in these lists would soon find a way of selling them to half a dozen different mail order concerns and a system of exchange between secretaries would speedily spring up. No law would be violated, detection would be next to impossible, for in most cases no one but the clerk and the purchaser of the list would have any knowledge of the transaction.

It is not necessary to impute corruptibility to Congressional clerks as a class to render this scheme practicable and dangerous to the retailers of the country; as a class the private secretaries of Senators and Representatives are as honest as any others, but it is submitted that there are black sheep in every flock and that it is unwise to subject several hundred young men working on small salaries in a city where the cost of living is very high to such a temptation as that presented by the Bailey amendment, especially when, as already indicated, no violation of the law is involved.

The point may be made, too, that inasmuch as the law permits the acquiring of lists of persons on the rural routes the law expects that use will be made of the privilege. There is even reason to think that some abuse of the privilege is contemplated, inasmuch as the Post Office Department is expressly forbidden to interfere with the giving out of the lists as provided by law. There is, too, it will be noticed, no reference to the use to be made of such lists nor anything to prevent their being disposed of with absolute freedom. Under these circumstances it would not be surprising if, for one reason or another, sooner or later the lists should be made public, and thus put into the possession of unscrupulous parties who would put them to fraudulent and other undesirable uses, as well as into the hands of the catalogue houses, who would find them a most important adjunct to their business, so disturbing to the general course of trade. While there is no evidence that this provision was inserted on the instance of the mail order houses, it is certainly greatly to their advantage. Defeated, indeed, in many of their projects, they by chance or design have achieved a notable success in this insidious and mischievous enactment.

Condition of Trade.

A genial and timely note is struck by one of our special correspondents in his letter on trade conditions in another column, in the remark that New England continues prosperous and happy. Reports from other centers fortunately indicate the prevalence of a like prosperity, and it may be hoped there is also the cheerful recognition of the benefits thus enjoyed and the opportunities which are presented for effort and industry rewarded by a good measure of success. The volume of business certainly is large, and the present year continues in many respects to make new records, as in the experience of many each month, as it goes, chronicles a larger business than the same month a year ago. Manufacturers very generally find it impossible to meet promptly the requirements of their customers, and in an increasing variety of goods the merchants, wholesale and retail, find their stocks more or less depleted. Prices are generally decidedly firm, with only here and there a line which, owing to special influences, developed irregularity tending toward weakness. Business is indeed feeling to some extent the coming of the warm weather, when there is naturally a relaxing in the pressure. Seasonable goods are very active, but Tools and everything concerned with the building interests are in large demand. Preparations for the summer and its vacations, together with the getting of plants in order, are beginning to receive definite attention. A cheerful feeling prevails in the trade, and with favorable crops there is a confident expectation that business should be good during the remainder of the year.

Chicago.

Without exception Western Hardware jobbers report an increased total for May, as compared with the same month last year, and the volume of orders already received this month indicates no considerable falling off in trade, notwithstanding the summer season. In the Heavy Hardware lines better deliveries of Wagon Malleables can be secured than at any time this year, this no doubt being due to the reduced requirements of the Wagon manufacturers at this time of the year. Implement Castings, on the other hand, continue scarce and deliveries are still deferred from two to three months. Prices continue to rule high and are practically without change. The Sheet market is strong and jobbers' stocks are low, owing to the inability of the manufacturers to make shipments. According to present indications the Sheet mills will only shut down for a brief period during July, and in the Tin Plate trade it is doubtful if any large portion of the mills will be idle, even for the most needed repairs. Heavy shipments of Galvanized Sheets continue to be made to San Francisco, and the heavy requirements to be used in temporary structures there no doubt has

been a large factor in bringing about the present shortage. Summer goods are moving freely and filling in orders are already being received in such lines as Garden Tools, Lawn Mowers, Screen Doors and Windows and Wire Cloth. Manufacturers of the latter are unable to meet requirements, and almost without exception have their output sold to the end of the present season. There is no abatement in the demand for Builders' Hardware and deliveries are rather slow. The absence of labor troubles is permitting construction work to go on uninterruptedly, and notwithstanding numerous large projects begun earlier in the year many large buildings are already being figured on, and permits issued by the Chicago Building Department during May exceed the total for the same month last year.

Boston.

BIGELOW & DOWSE COMPANY.—New England continues prosperous and happy. Factories are running full time and their products are being distributed, so there is no accumulation of stocks. Although our spring was about three weeks late the summer is now with us and the crops are making rapid progress. The country is looking beautiful, the air is invigorating, and the summer hotels are looking forward to a great rush of visitors. A good, warm summer brings millions of money to the hotels and summer resorts of New England, and if one notes the increasing numbers that come each year they must infer that they get value received from the fresh sea breezes and good fare they find in the numberless New England homes. The tide commences the coming week, when 25,000 Christian Scientists come to dedicate their beautiful new Mother Church, which has just been completed. The week following the medical fraternity come in even larger numbers to dedicate the new Harvard Medical School (five buildings) built of marble and given to the university by three of its wealthy alumni. June is the month of all others to see New England in its greatest beauty.

The month of May is the banner month of each year in the Hardware trade of New England, and the month just closed will show a handsome increase over that of former years. Manufacturers are too busy and too short of stock to seek the trade of the retail dealers, who find themselves well cared for and their orders filled promptly by the jobbers who anticipated present conditions and have large stocks of Builders' Hardware.

Present conditions at the factories are deplorable, and one gets used to a one or two months' postponement in the delivery of an order. Seasonable goods are having a great sale this season, which is favorable for Lawn Mowers, which are selling freely.

The late meeting at Cleveland of the Executive Committee of the National Hardware Association and of the Joint Catalogue House Committee was fully attended. The work of the past was carefully reviewed and new plans for future work were unanimously adopted. The members are a unit, working hand in hand with each other, and have faith in the work they have undertaken.

The selection of the Marlborough-Blenheim at Atlantic City for the annual meeting of the National Hardware and American Hardware Manufacturers' Associations next October seems to meet with general approval and already many are arranging for accommodations.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The near approach of the first great convention of the year—that of the Southern Hardware Jobbers' Association and the American Hardware Manufacturers' Association—to be held next week at Hot Springs, Va., reminds us of the other great national convention which, we are glad to note, is to be held in our suburban seaside resort in October. Those of us who are near enough to visit Atlantic City frequently, and who are familiar with it in every month of the year, have no hesitation in saying that the climate and conditions in October are unsurpassed by any other season. This fact, taken together with the superb hotel accommodations offered by the new Marlborough-Blenheim, is sufficient to warrant the promise of the most enjoyable and successful convention the associations ever held. One of the especially enjoyable features of this mammoth hotel, accommodating 1100 guests, is the large number of bathrooms, guaranteeing to all early comers at least this very desirable addition to ordinary hotel accommodations. The writer, in making some reservations for rooms, was surprised to find that already a number of the delegates have been forehanded enough to place their orders for fall delivery, and takes the liberty in this way of advising our jobbing friends to give the subject their prompt attention.

The abundant rains of the last week have been a great help to the farming and trucking interests of this vicinity, and have given an added stimulus to business, which was good enough not to be complained of before. The depression resulting from agitation in the anthracite and bituminous coal fields has about disappeared, and merchants are ordering in more liberal fashion.

Locally we have had some very interesting reading as a result of the Congressional investigation of our leading railroad interests, particularly concerning their relation to the various mining companies, both independent and affiliated with the roads, and while some people regret that so much alleged corruption is given publicity, the very agitation is an indication of better things to come, and the opportunity for the independent operators to get a hearing, not only before the committee, but before the greater court of public opinion, cannot help but bring relief to many other interests whose grievances are now unheard, or at least unheeded, and it will, as a final result, be beneficial both to the railroads and their patrons.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—June opens with very favorable conditions. There have been excessive rains over much of the country, but except in the Red River Valley crops have been put in and small grain and grass have made very satisfactory growth, and the conditions for them are exceptionally favorable. A cool, damp May is doubtless better for them, and both these features have been with us in abundance. The weather is now very fine and crops are doing all that could be asked for.

In the Red River Valley a full crop cannot be raised, and the result will be more summer fallowing and probably larger and better crops next year. The past four years' experience has made it plain to everybody that what is needed for that section, which is one of the most fertile valleys in the world, is a thorough, comprehensive system of drainage conducted by the Federal and State Governments. The bill now before Congress, known as the Steenerson bill, is regarded with favor, and is probably about such a bill as should be passed for the purpose of securing the necessary preliminary surveys and starting the work on right lines.

Trade is moving along smoothly, and in volume, as well as in other conditions, it is coming out about as expected. June is expected to make a good showing.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market continues comfortably active. There is so much confidence in the future that arrangements are now made for a good while ahead, and hence some weeks fail to show the number of important individual transactions which the volume of business would warrant one to expect. As buying becomes more systematized and scientific by reason of comparative records and formulated experience there is less of the flurry and fewer spasmodic features than in the old times, when it was largely a matter of panic or speculation.

The steadying influence of a large combination is unquestionably felt whether the tendency of the market is up or down, so that while such large earnings are not so often made on paper by reason of huge over purchases on the rising market, at the same time the reaction is not so severely felt, for which a large number of people may be duly thankful. The bad times we used to have in the old days, when Bar Iron had been to something like 5 cents per pound and had to plunge headlong downward as the ship loads of foreign supplies began to arrive, are happily past. We neither ascend to such hights or plunge into

such depths, but we have our new problems to face and contend with just the same, and we can by no means afford to take it too easy. The other fellow seems at times to be caring for you, but he seldom is, and it is just as well to recognize that fact.

The report of the Post Office Committee is gratifying to the trade. There is one change which it is hoped will be made in the near future, namely, that of reduction of local letters from 2 cents to 1 cent, where deliveries are strictly within the limits of the city in which the letter is posted. This would lead to a more liberal use of the mails for local intercourse than is now enjoyed.

The meeting at Hot Springs is looked forward to with much pleasure. One subject might claim a certain amount of discussion, namely, that of the number of very small country banks charging for cashing their own checks, which many of them are trying to do. It has heretofore been presumed that when a bill of merchandise is sold it is sold for par funds and not subject to a rake-off for the benefit of some local bank, with which the seller, at least, has nothing to do. Sometimes it occurs that a customer will request that a draft be sent only through a certain bank. When sent through that bank the notice comes back that it will be cared for by payment of a fee. This is generally in the shape of an excessive collection charge, designed purely for the benefit of the local bank. Merchandising is not prepared to stand a tax of this kind laid on by individuals. It has enough to stand up under the city and State taxes, which as a rule are imposed in full measure by those whom chance or party machinery has put into power for the time being.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—It was getting very dry in this neighborhood, but recent heavy rains have relieved the situation. All indications point to a phenomenal fruit crop. This means that we will all be short of Fruit Cans, Fruit Jars, Rubber Bands, Parers, Seeders, Copper and Enameled Preserving Kettles and other fruit goods. The wise retail merchant will try to work his jobber for a dating on these goods and have them shipped immediately. "A bird in the store is worth two on the back order book."

After all, this country seems to run on a hand to mouth policy. Whenever there is an unusual demand for anything there is immediately a shortage. For example, take Rubber Hose. The manufacturer or jobber who had enough Rubber Hose this year was in luck. We thought we had enough—we bought in advance as much as our nerve would stand—but we were cleaned out. Then we tried to buy from other jobbers and manufacturers and they were also short. I suppose all of us will have a good stock when the season is over.

It is interesting to study the effect upon the trade of dry and wet weather. In dry weather we sell Rubber Hose and Tire Bolts, in wet weather Lawn Mowers and Scythes. When we have a very wet season we sell a great many of these latter goods. Then next season the machine made buyer buys according to his records of the previous year, forgetting all about weather conditions of that year. Then it turns dry and everybody is overstocked. Every real good buyer should be an expert weather prophet.

There are three absolutely necessary requisites in a good buyer. I name them in the order of their importance: First, to have the goods when they are wanted. Second, not to have goods when not wanted. Third, and last, to get the "extra five." I have known buyers to get the extra five who never had the goods until the season was over. To the above may be added that when goods advance a buyer should have a large contract and when they decline he should not have an over stock. Naturally these requirements are all very simple. Again let me repeat that the main thing is to have the goods when they are wanted.

In my opinion the best manufacturer is the one who fills his orders, the best jobber is the one who fills his orders and the best retailer is the man who has the goods when they are called for. "Being caught with the goods on you" is the letter A of the business alphabet. It is 95 points of the game. The manufacturer's excuse, "a break down in our machinery," is becoming moth eaten; the jobber's excuse, "a carload coming," is a chestnut.

Then there is another thought: When manufacturers cannot supply the demand from natural sources, why should they seek the business of a class of trade that demoralizes prices and causes disagreeable conditions?

The Hardware dealer will be respected just in proportion to the success of his efforts in guiding and controlling the distribution of his line of goods. Some of us may kick because the plumber will not allow us to have a farm hand put in our bathtub, but in the end we respect the plumber just the same.

Some of us may have a gnawing ambition to have our goods sold by every jobber and every retailer and every catalogue house.

Tut! Tut! Too much ambition brings on insomnia and dyspepsia; it does not make for happiness. Alexander conquered all the known world, but he died young. History teaches us that while Rome was spreading out her borders she went to pieces at home.

Let us remember the dried bull's hide: When you step on it in one place it rises up everywhere else, and, unfortunately, men are not made on the order of centipedes.

Cleveland.

THE W. BINGHAM COMPANY.—An exceedingly good business is coming to us from all parts of the country. There seems to be plenty of money, and people are buying fancy as well as necessary goods very freely. Everybody insists upon having immediate shipment and each man wants to be served first. Now if some customers had not indulged in so much hand to mouth buying, but had stocked up early in the season instead of waiting to buy the different lines of goods, there would not be so many "hurry up" or back orders. We have before us the Macedonian cry, "Come over and help us." This was written by a large retail merchant in Central Ohio to a salesman: "We will either have to stock up on Hardware or quit business. If you wish us to continue please come over this week and sell us some goods."

This is on a par with many other letters that we are receiving from customers, "ship goods out by first express or fast freight," etc. This goes to show that the retail merchant is having a good lively trade and is shy on goods. Lawn Mowers, for instance—a great many were sold early and now customers are sorting up. Some did not buy early enough, but expect to be served promptly now. On account of the great variety in styles and sizes it is impossible to serve all as promptly as they desire. However, we are pretty well fixed, and have not been obliged to back order many Mowers. The sales of Lawn Mowers this year so far far exceeds any other year. It is wonderful what a splendid machine a person can buy for a small amount of money. A 14 or 16 inch well made, good looking Mowers with ball bearings on the gears can be bought for $3.50 to $5, according to the size of the drive wheel, and it is a better Mower in every way than was sold five or ten years ago at double the price. These conditions are brought about by the continual improvements that some manufacturers have made in their machines, and the large quantity they turn out, enabling them to put better Mowers upon the market at less money than ever before.

Refrigerators are having a free sale at the present time. Those merchants who did not buy early will not be so well served, perhaps, as they would like. The advance in labor, lumber and other materials that enter into the manufacture of Refrigerators would admit of a good advance in prices, but the manufacturers and jobbers are standing pat on prices for this season. We believe they are a good line to buy at present prices, even though, perhaps, some of them might possibly be carried over into next season.

The general line of Hardware, Mining, Milling and Manufacturing supplies, especially in the House Trimming line, is going forward in large quantities. However, there is quite a scarcity in some lines. Immense quantities of Hardware will be needed upon the Pacific Coast

and we predict a good, lively trade during the remainder of the year in all lines in all sections of our land.

In spite of the immense demand for Wire and Nails the manufacturers have not advanced their prices, which the advance in labor, short hours, etc., would seem to warrant. Axes are cheap and many customers are taking advantage of present prices and are sorting up for immediate and fall shipment. Lanterns for fall shipment are also having a large sale.

Slow shipments of Bright Tin and Roofing Plates, also Sheet Iron from mills, have a tendency to hold prices firm and the jobbers who have these goods in stock are having a nice trade on them. We advise the retailer if he wants to be served promptly to buy his goods from jobbers who have the goods on hand.

It would seem that Screws and Bolts and Copper and Brass Goods at present prices are good propositions to stock up on. In short a very satisfactory condition exists all around.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The month of May just closed was undoubtedly the most satisfactory May for the sale of Hardware that we have ever had in this section. May is usually a dull month, and is taken advantage of by most jobbers to overhaul their stocks and prepare for annual inventory. This year the amount of work going on in the packing rooms of the Hardware stores in May would have indicated that we were in the midst of the spring trade.

This week we have had with us a State Democratic convention, bringing to our city representatives from every county in the State, which has enabled us to make diligent inquiry as to crop conditions, and we are glad to say that we haven't had a single unfavorable report. The growing crop is in excellent condition. The prospects for all kinds of crops are good. The fruit crop in this State is better than it has been for years, and what we say of Tennessee crops, so far as we are able to learn, is applicable to the other Southern States in which we do business. We therefore feel much encouraged as to prospects for fall business. Collections are good.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The business situation in Omaha, representing the Trans-Missouri region, remains in practically the same condition as outlined in our former reports, with few changes of any kind and none of importance to distinguish the present period from prior weeks. A free movement of merchandise still continues, and although agriculturists are just now busy in the fields, still the volume of trade is very good and up to expectations. Owing to continued changes in weather conditions outside operations have been somewhat delayed, but every favorable opportunity is promptly taken advantage of to push forward necessary work. Frequent rains have moistened the soil until it is declared to be in excellent condition, and it is estimated that the acreage under cultivation is larger than ever. All kinds of labor are well employed, so that no enforced idleness is observable anywhere. All that is needed now is favorable weather for the growing crops, and with this assured general business for the latter half of the year will undoubtedly prove eminently satisfactory. From extended reports received there appears to be little doubt but what a heavy yield of grain, &c., will be harvested.

Portland, Oregon.

FAILING, HAINES & MCCALMAN.—Business is good in this section and all dealers are having difficulty in keeping up with it. The country is prosperous and new people are coming in constantly, and almost all of them have some capital to start with in the new country. Crops are promising, and with the railroad building now going on we all ought to have a very busy and profitable summer.

The news brought from San Francisco by the members of the Steel Corporation Committee was very encouraging, as they said that practically all their customers there were in condition to resume business as soon as they could get stock from the East. They found wonderfully good conditions of credits, considering the disaster and the wiping out of property values. The people have great confidence in their city and in the future rebuilding of a greater and more beautiful San Francisco.

The Pacific Hardware & Metal Association meets at Monterey, Cal., about the middle of June and a large attendance is expected. Practically all jobbers here and on the Sound will be represented, as it is expected that important business will come up, owing to the conditions at San Francisco.

NOTES ON PRICES.

Wire Nails.—The demand is not quite so pronounced as it has been, owing to the natural decrease in the season's requirements. There are no indications that this condition will result in a change in quotations. There may be, as is often the case, slight irregularities in price before regular buying for the fall trade commences, in an effort by some mills to secure contract orders. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in ten days:

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—Small lots from store are in moderate demand, with jobbers' prices well maintained, according to reports. Small lots from store are quoted on the basis of $2.15 per keg.

Chicago.—A seasonable falling off in the demand for Wire Nails is reported, and concessions are being made in a few sections to induce buyers to purchase. The shipments during the month of May were greatly in excess of those during the same month a year ago, and as jobbers' stocks throughout the country are very low, it is believed that the movement this month will be considerably above normal. Official quotations are as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—New business in Wire Nails is somewhat light, but specifications on contracts are coming in quite freely, and shipments by the mills continue heavy. Prices are being well sustained, and there is very little complaint of any cutting except to certain Southern points of delivery to which some favorably located mills have low rates of freight. In some cases this competition is met by the larger interests. We quote: Wire Nails, $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in ten days.

Cut Nails.—At the meeting of the Cut Nail Association, held last week, prices were reaffirmed, no official recognition being taken of the irregularities in the market. A moderate amount of new business is being received by the mills, which are largely engaged in filling contract orders. Concessions of 5 to 10 cents per keg on carloads or larger lots continue to be made from regular quotations. Quotations are as follows: $1.75 to $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—There are no market changes, demand being moderate and prices the same as for some time. Quotations are on the basis of $2.05 for keg for small lots from store.

Chicago.—Jobbers locally report a better than usual trading in Cut Nails during the month of May, as compared with corresponding months of past years. The mills are largely engaged in filling specifications. Quotations are as follows: Steel Cut Nails in car lots, $1.90 to $1.95; less than car lots, $2; Iron Cut Nails, $2 to $2.05 in car lots; less than car lots, $2.10.

Pittsburgh.—At a meeting of the Cut Nail Association, held on Tuesday, May 29, prices were reaffirmed,

but concessions of 5 to 10 cents a keg on carloads or larger lots are still being made. New demand for Cut Nails is light, but specifications on contracts are being received in fairly large volume. We quote Cut Nails at $1.75 to $1.80, base, f.o.b. Pittsburgh, for car load lots, and $1.85 in less than carload lots. For Iron Cut Nails an advance of 10 cents per keg is charged.

Barb Wire.—From the Hardware trade demand is light, but large shipments are being made to the railways. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

	Painted.	Galv.
Jobbers, carload lots	$2.00	$2.30
Retailers, carload lots	2.05	2.35
Retailers, less than carload lots	2.15	2.45

Chicago.—Sales are limited almost entirely to small lots to fill out the depleted jobbers' stocks. Railroad requirements, however, continue heavy and mill shipments are somewhat above normal for this season of the year. Quotations are firmly maintained, as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots to jobbers, $2.10; Galvanized, $2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Practically no new orders are being placed, but the mills are still making shipments on old contracts. Prices are being fairly well maintained, as follows: Painted Barb Wire, $2, and Galvanized, $2.30, in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in ten days.

Smooth Fence Wire.—A large volume of business has been entered by the mills for delivery during the last half of the year. The mills also have large shipments to make during this month. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55	
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago.—The demand for Wire from manufacturing plants outside of the Woven Fence trade is unusually good, and the mills are making heavy shipments. Practically all of the contracts for second half requirements have already been closed, and the total show a comfortable average increase over the consumption during the first half of the year. Prices continue to be well maintained, as follows: To jobbers, $1.85, f.o.b. Chicago, in car lots, and car lots to retailers, $1.90.

Pittsburgh.—The Field Fence season is ended, but orders are coming in quite freely from railroads. We also note that the mills are making heavy shipments of Bale Ties, and are somewhat behind in deliveries. Concessions in prices continue to be made to certain Southern points of delivery, which are sometimes met by the larger mills. Generally speaking, however, prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The above prices are for base numbers, 6 to 9.

Rope.—The Rope market remains in an unchanged condition, with a fair demand. Reports are occasionally heard of ¼ to ½ cent lower prices being made on No. 2 quality Sisal Rope than the regular quotations, which have not been changed. This is owing to the lower price of Sisal Hemp. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality, 8 cents per pound.

Binder Twine.—Since our last report there has been little change in the market. Oats and winter wheat have been backward, owing to lack of rain, but this condition has been somewhat relieved in some sections. Straw may be light and consequently not require so much twine to bind it. Business is comparatively light with manufacturers, and prices range from 9¼ to 10 cents per pound for lots of less than 5 tons of Sisal and Standard Twine.

Cap and Set Screws.—A change is noted in the market for Cap and Set Screws, an advance of 2½ per cent. having been made in the latter, while the former have sustained a corresponding decline. Some interest is expressed regarding the irregularity of these movements, which is ascribed to peculiar conditions in the market rather than to any unusual variation in demand or manufacturing cost.

Cow Bells.—Following the report touched on in these columns last week that some manufacturers of common Cow Bells had withdrawn their quotations, an advance of 5 per cent. has been announced by the houses referred to. Another manufacturer, whose line has ruled slightly above the others, reports that his prices are unchanged.

Brass Cocks.—The continued maintenance of the copper market on a high level has been the primary cause of several advances in Brass Cocks within the past few months. Some manufacturers are said to have been looking for a reaction in the raw material, and as a result their stocks are low. Jobbers also are understood to have been carrying light stocks, and are having some difficulty in securing promptly goods to meet their requirements. In view of these conditions and the fact that the uniformity in quotations would indicate more or less harmony among the manufacturers, both of Hardware and plumbers' grades, prices are naturally holding very firm.

Stanley Rule & Level Company.—The Stanley Rule & Level Company, New Britain, Conn., and 107 Chambers street, New York, having in mind what it believes to be the best interests of the wholesale merchants handling and marketing the numerous kinds of fine woodworkers' tools it manufactures, has decided that in the future it will make an extra charge of 5 per cent. on the net amount of all invoices for goods ordered for shipment to points where the jobber ordering the goods does not carry a stock. The company takes this position, the better to protect the jobbing trade who carry a general line of its goods in stock. This extra charge, however, will not apply on orders for repairs or special tools to be sent by mail or express.

Lamp Wicks.—The Wick department of the Standard Oil Company announces, under date of June 2, that prices for Lamp, Stove and Heater Wicks have been reduced about 30 per cent., making the present discount 70 per cent. off lists. A reduction on this line was recently made at the opening of the summer season, and the lead of the interest above referred to will undoubtedly be followed by smaller manufacturers.

Asbestos.—Despite considerable reticence among leading manufacturers of Asbestos materials as to prices, and especially as to the current state of the market, a composite opinion in brief is that such understanding as has prevailed for over a year in relation to prices is not now existent, and each maker is free to make such quotations as appears most suitable. The market has been open on Mill Board for several weeks, and for about a week other Asbestos commodities, such as Pipe Coverings, Molded Air Cells, Fire Felt and Magnesia, have been more or less shaded. For much of this material the present is not a busy season, and prices for spot delivery are higher than for futures. Some manufacturers refer reminiscently to the past, of more than a year ago, when prices were of the free for all character and profits were slim, and express the belief that such recent experiences will operate to check extremely low rates. However that may be, it is a fact that where for a year or more back there were agreed prices that were maintained, any such arrangement has been discontinued. There has, however, thus far been no quotable change in prices, and in some quarters the opinion is expressed that they will be maintained as before.

Window Glass.—The American Window Glass Company has closed down 88 per cent. of its operating ca-

pacity and states that the factories which have been put out of operation will not resume until September. This leaves but two of the American company's factories in operation. This company is credited with holding most of the available single strength glass. It is intimated that its price will soon be advanced from 90 and 5 per cent. to 90 per cent. discount and that a charge for packages may then be made. The closing of these plants is reported as having stimulated demand to some extent. It is understood that at least eight hand operated factories have now closed down for the summer. Others will soon be obliged to close, in order to make repairs or because of the hot weather. Jobbers' quotations are as follows: Eastern district, for all sizes of single and double strength, 90 and 10 per cent. discount; New York City, 99 and 10 and 5 per cent. discount for all sizes of single and double strength.

Linseed Oil.—An increased demand is reported for small lots of Oil and contract deliveries as being in fair volume. The market is not considered as being in a settled condition. Quotations are as follows: City Raw, 40 to 41 cents per gallon; out of town Raw, 37 to 38 cents per gallon. Boiled Oil is 1 to 2 cents per gallon advance over Raw.

Spirits Turpentine.—The Savannah market has been unsettled during the week, owing, it is reported, to manipulation by speculators. This caused lack of confidence in New York buyers regarding the future of the market here. The amount of business done has been moderate. New York quotations are unchanged, as follows, according to quantity: Oil Barrels, 60½ to 61 cents; Machine Made Barrels, 61 to 61½ cents per gallon.

The Post Office Appropriation Bill.

FROM OUR SPECIAL WASHINGTON CORRESPONDENT.

WASHINGTON, D. C., June 5, 1906.

READERS of *The Iron Age* will remember that during the last session of Congress it became necessary for the Hardware retailers to vigorously oppose a regulation of the Post Office Department, issued by Fourth Assistant Postmaster-General DeGraw, permitting mail to be delivered to boxes on rural routes when addressed by number only and authorizing the postmasters to supply applicants with the number of routes radiating from their respective offices and the number of boxes on each route. The exact origin of this order was never officially determined, but it was finally indefinitely suspended after a careful investigation, and the retail Hardwaremen of the country were undoubtedly entitled to the credit for the department's reversal of its original ruling.

Two or three years before Mr. DeGraw's order was issued A. W. Machen, then superintendent of the rural free delivery service, issued an order, in violation of the postal regulations, authorizing postmasters to collect and post in their respective offices the names and addresses of all the patrons of rural routes radiating therefrom. Inasmuch as this order was communicated to certain mail order houses several months before it was published, there has never been any doubt that it was improperly procured. It was subsequently reversed by the late Postmaster-General Payne, and the present head of the department has used extraordinary vigilance to prevent abuses of this character.

These two incidents illustrate the importance to the retail merchants of the country that no regulation should be made either facilitating

The Collection of the Names and Addresses

of the patrons of rural routes by the catalogue houses or permitting catalogues and other matter to be distributed by wholesale through the rural service without the expense to the parties distributing it which is now inseparable from the collection of names and addresses. In fact, this cost is the measure of the local retailer's protection. To canvass a rural route serving from 100 to 150 families involves a considerable expense, and as an average of five routes radiate from each rural post office the cost of canvassing such territory is sufficiently high to deter even the most prosperous of the catalogue concerns from attempting the work on such a wholesale basis as to effect a great injury to local retailers.

During the discussion of the post office appropriation bill in the Senate, however, a new phase of this subject was brought up and an amendment was added to the bill, the practical effect of which

Must Be Watched by Retail Merchants Everywhere

with the closest possible attention, in order that it may be repealed or modified at the next session if it is found to permit the abuse which it is quite conceivable may follow its execution.

Senator Tillman of South Carolina, an irascible gentleman who frequently complains of the rules of the departments and even of the Senate itself, declared that the Post Office Department was much given to "arbitrary dictation and assumption of authority," and in explanation said that a few months ago he sent out some letters to rural free delivery carriers in his State, asking them to send him the names of the principal patrons of their respective routes, and especially those who would appreciate public documents, seeds, &c., which Senators are permitted to distribute gratuitously. Continuing, Senator Tillman said:

> Some of these carriers notified me that it was against the rules of the Post Office Department for them to furnish such names to anybody. I thereupon wrote a letter to the Post Office Department making inquiry as to whether I could not get the names of my own constituents for a perfectly legitimate and proper purpose, and asked that the regulations be modified so far as Senators and Representatives were concerned; but they sternly refused to do so, and said it was against their custom. Therefore I could not get them to do anything.
>
> I can understand why it is not desirable that such names should be distributed generally, because there are certain instrumentalities of fraud practiced on unsuspecting people to get the names of *bona fide* residents to send them all sorts of circulars, and all that kind of thing. I thought, however, it might be permitted that a rural carrier should send to a representative of his State or of his district in Congress the names of his constituents; but the high muck-a-mucks up here did not think it was permissible, and I had to submit.

Senator Bailey's Amendment.

Later in the discussion Senator Bailey of Texas brought up the same matter, submitting an amendment in the following form:

> The Post Office Department shall make no regulation which will prevent any postmaster or any rural route carrier from furnishing a Senator from a State the names of those to whom he delivers mail in that State, nor to a Representative or Delegate the names of those to whom he delivers mail within the district or Territory so represented.

In support of his amendment Senator Bailey said that he thought it an odd regulation that prohibits Senators and Representatives from securing the names of the very people to whom the publications and seeds to be distributed by the Government should properly go. Senator Hopkins of Illinois drew attention to the fact that Senators could easily secure the names of their constituents from private sources and without burdening the postal service. Senator Penrose sounded a warning against the proposed amendment and defended the department's position. "The fact of the matter is," said he, "that this information would be sought after by every newspaper owner and trafficker in patent medicines who would want to distribute his wares among those people." Senator Bailey replied that the amendment was drawn by his private secretary, who had explained to him the difficulty that he had experienced in distributing the documents and seeds alloted to the Senator. Thereupon, without the formality of a roll call, Senator Bailey's amendment was agreed to.

A Harmless Amendment Withdrawn.

Senator Bailey followed up his success in amending the bill with another modification along the same line, reading as follows:

> Any mail matter entitled to free transportation under the frank of a Senator, Representative or Delegate in Congress, when addressed to a rural route and a numbered box thereon, shall be delivered as addressed.

Oddly enough, this amendment, which would have been perfectly harmless, inasmuch as matter to be deliv-

ered by box number only would be limited to frankable documents, seeds, &c., distributed by Senators and Representatives, was withdrawn by Senator Bailey.

The Bristow Plan Again.

During the debate on the bill Senator Clay of Georgia strongly urged the adoption of the so-called Bristow plan, permitting rural carriers to handle mail matter originating at distributing offices at a reduced rate of postage and to execute commissions for the patrons of their respective routes. A great deal of missionary work is being done in the interest of this project, and retailers should keep a sharp eye on all developments in this direction, for it is believed by judges of experience here to foreshadow the next important change in the regulations governing the rural service. In this connection Senator Clay said:

In my judgment the rural carriers should be given permission to carry packages for the accommodation of their patrons. The privilege should be given to the farmer's wife to purchase small necessary family articles at the village shop through the rural carriers when it is inconvenient for them to go to the markets. The farmers should realize that rural free delivery of mail can never be made a thorough success except in localities possessing good thoroughfares, insuring rapid transit at all seasons of the year. The farmers bear a large part of the burden of taxation and they are justly entitled to some of the privileges accorded to others. The only way the farmer's family can be kept satisfied with country life is to put them in close touch and intercommunication with the world's thought and action, or they will migrate from the country to the already overcrowded cities. The farmer must be given the opportunity to take daily papers and monthly magazines, and to be put in touch with all the elevating, refining and educating influences of the day. Of all men the farmer needs the daily papers. He is enabled thereby to keep in touch with the world's advance, to be posted on current events, and to understand daily markets. Man is a social creature. He cannot live by himself. He is anxious to communicate with others and to know what is going on in the social and business world. Isolation and loneliness bring about dissatisfaction with country life. The rural carrier each day brings sunshine and happiness to the country home.

Senator Clay's arguments in favor of the extension of the rural service are those relied upon by its friends to cause its expansion to such proportions that in a very few years it will provide free delivery for every man, woman and child in the United States, at an expense that will probably exceed $100,000,000. The service now supplies about 11,000,000 persons, at a cost of $28,700,000 for the coming fiscal year.

Reclassification of Second-Class Mail Matter.

During the consideration of another feature of the bill Senator Bailey made a strong argument against a domestic parcels post and in favor of the reclassification of matter now passing through the mails at second-class rates. He urged that the publishers' rate be restricted to newspapers and periodicals published for the dissemination of news and commercial intelligence, as distinguished from house organs, so-called literary magazines and publications issued chiefly for profit. In this connection he said:

Originally it was not contemplated that magazines and other forms of merchandise should become a part of the postal system. It was organized for letters and newspapers, and if it were properly confined to-day to the object of its original organization it could supplement the liberal appropriation which is now made for the rural free delivery, and instead of a deficit there would be a surplus. The letter mail of the United States to-day not only pays its own expense, but contributes a round sum toward meeting the losses incurred by the Post Office Department in carrying other matter; and it seems to me that, instead of increasing the deficit which arises from carrying this second-class matter and leaving the taxpayers of the country to meet this deficit, we ought to exclude from the mails some of those things which are now carried at a loss.

The Senate finally adopted an amendment prepared by the Post Office Committee authorizing the appointment of a commission to investigate second-class abuses and to suggest the form of a statute to cover the handling of second-class mail.

W. L. C.

THE DE HAVEN MFG. COMPANY, 50-54 Columbia Heights, Brooklyn, N. Y., has recently purchased the entire business of the Standard Metal Strap Company, of New York City, which has been transferred to its Brooklyn plant, the capacity of which has nearly been doubled. This will give the company a larger line of goods and better facilities to provide for customers' requirements.

TACONY'S THIRTY-FIFTH ANNIVERSARY.

TACONY, a suburb of Philadelphia, last week celebrated the thirty-fifth anniversary of its commencement as a manufacturing center. During the season 1871-1872 Henry Disston, finding the Front and Laurel streets quarters too cramped to handle the constantly increasing business and unable to secure enough room in the neighborhood, decided to move to a more commodious location. After looking about for some time he selected the present site of the works at Tacony, the total purchases of land amounting to 390 acres, 40 acres being reserved by the Disstons for strictly manufacturing purposes. This was the commencement of a new era for Tacony, and what once was only farm land was transformed into a great and growing suburban town.

At the Laurel street works in 1854-1855 Henry Disston erected a crucible steel plant, especially adapted for making Saw steel, and the Disston Saw Works thereby was the first to manufacture Saws from the raw material to the finished article. This, in fact, was the first successful crucible steel melting plant in America, and in line with the making of progress it can now be stated that at the Disston Saw Works on April 24 last an electric furnace was successfully operated for the melting of crucible steel, it also being the first of the kind installed in the United States.

With a firm composed of men practical in their line, working on a policy tried and proved, a management fully up to date, a corps of efficient salesmen and an army of competent and skilled workmen, many of whom have been with the firm for years, more than 300 for 20 years or over, together with the use of machinery specially invented for various purposes, there is an explanation in good part at least of the great reputation of the company's products here and abroad.

KAMPFE BROS.' NEW SELLING SYSTEM.

KAMPFE BROS., 8-12 Reade street, New York, inventors and manufacturers of the Star Safety Razor, have perfected a method by which they propose to maintain a fixed price on the patented goods of their production, which will insure to the merchant a fair margin of profit. In order to do this they have had prepared an agent's license, which is legally executed by each merchant, who obligates himself to maintain the retail prices for Star Safety Razors and supplies, made under various U. S. patents and trademarks, owned and controlled exclusively by them. Furthermore, it is the intention of the house to enforce their rights in the courts, and in order to do so are prepared to say "we have treated all of our customers equitably and fairly alike; we have demanded the some conditions of all and have fixed a uniform price for all." This firm proposes to treat all alike, fixing a retail price to which absolutely every one, without exception, must conform or cease to sell the goods. In the carrying out of this radical policy it became necessary to discontinue some very large accounts, which included the largest jobbers, whose goods were bought back. In effect any one, no matter who, must actually sell the goods at predetermined fixed rates, which eliminates gift enterprises and premiums of all kinds. It will be remembered that the principle on which this action is based has already been adjudicated by high Federal courts.

The new system, which began with the advent of 1906, was adopted with some uncertainty as to the ultimate outcome, especially in view of the withdrawal of relations with large buyers in various channels, but we are advised enough time has now elapsed to convince the management of the wisdom of its action, the sales since the beginning of the year having markedly increased in volume and value, the retail merchants supporting the movement loyally and successfully. As the matter now stands any licensed dealer can be certain that no one can undersell the fixed price, for if this is done the offending individual's supply will be cut off.

THE WIRE GOODS COMPANY, Worcester, Mass., under date of June 1 announces that its factory will be closed July 2-7 for inventory and repairs. As this is a busy season the company hopes that merchants will anticipate their wants.

Profit for Hardwaremen in Selling Iron Fencing

ENTERPRISING and aggressive Hardware merchants who are on the lookout for profitable lines to handle will do well to canvass the opportunities presented by the Iron Fencing line. This is a rapidly expanding field in which many Hardwaremen, as attested by extracts from letters from Fencing manufacturers given below, are already deriving very satisfactory returns as a result of their energy and boldness in taking it up. It is evident that when the line is intelligently and persistently pushed the financial consequences amply reimburse the capable merchant for his time and labor, while doubtless also laying a foundation for business in other goods carried by him and giving him prestige as an energetic and up to date business man. Quite a number of merchants are also going into ornamental work, such as Lawn Settees, Hitching Posts, Tree Boxes, Iron Flower Vases and other lawn furniture specialties, which have become popular and for which there is a constantly increasing demand. The sale of this line is likewise attended by excellent financial results.

The following excerpts from letters received from manufacturers of Iron Fencing make clear the growing importance and materially increasing demand for this line and the manner in which its sale may be taken up and prosecuted. It will be observed that orders are uniformly taken by catalogue and the specifications sent to the manufacturer, no stock being carried by the merchant, although a few sample rolls may be advantageous to have in the store after a demand has been built up and the merchant has secured a reputation as a Fencing man.

LETTERS FROM MANUFACTURERS.

No Line More Profitable.

FROM AN OHIO COMPANY: It is almost impossible for a person not thoroughly familiar with this business to realize the great increase in the demand for Iron Fence in the past few years. We are to-day furnishing Iron Fence in large quantities to dealers and agents in every State and Territory of the United States, not to mention Canada, Mexico and foreign countries. Many of the successful agents are enterprising and progressive hardware dealers, who find Iron Fencing one of the most profitable lines that they handle.

THE OPPORTUNITIES ARE ALMOST UNLIMITED

for the sale of this class of work, and the Hardware merchants have a splendid opportunity to handle this business without interfering with their other trade. It being a class of work which must all be made specially to fit the measurement of the lot to be inclosed, it must be sold from catalogue and ordered direct from the factory and consequently

REQUIRES NO INVESTMENT

on the part of the agent or dealer. As to how these agents handle Iron Fence successfully, it is by soliciting orders and keeping the fact before the people that they are prepared to furnish this class of work. Many Hardware dealers do not realize what an opportunity they are missing in not taking up the sale of Iron Fence.

WE KNOW THAT THERE IS NO LINE

which the Hardware merchant can handle which will bring him any better, if as good, returns for the time and money expended as the sale of Iron Fence. We have on our books to-day hundreds of Hardware dealers who have been selling our work for a number of years. Many of them felt when they took up the sale of this line that it was not a very good opportunity, but a few orders taken led to the taking of other orders and they saw the possibilities of development of this line, until some of them have found it so profitable that they have one or two people giving their entire time to the Iron Fence business from early in the spring until late in the fall.

No Capital Required.

FROM A MICHIGAN MANUFACTURER: We sell a great deal of Fencing through Hardware merchants. They are enterprising and can do a good deal of business in this line with no outlay in the way of stock. Almost all Fencing is made up to order and is sold from illustrations and no samples, so that a dealer uses none of his capital in handling Fencing.

Most of Their Customers Hardwaremen.

FROM AN OHIO MANUFACTURER: This line can be handled to very good advantage by Hardware dealers, as is shown by the fact that the larger part of the business in this line comes to us through Hardwaremen, a number of them making it one of the regular lines.

THE PRINCIPAL DIFFICULTY

lies in the fact that the ordinary dealer does not feel confident of his ability to figure the exact cost of a fence by using a price-list, and as there is not always a steady demand for fencing, we think a great number of dealers are inclined to pay no attention to this line. We endeavor to make our price-lists as clear and simple as possible, but we always advise the dealer or prospective customer to send us a

DIAGRAM OF THE FENCE WANTED,

showing the location of the gates and large posts, and we are then able to quote them net prices on a complete fence for any number of styles, and are also able to give them an estimate of the freight on same. This simplifies the matter very greatly for the dealer as well as the customer, and if all dealers would make it a point to furnish diagrams they would find fencing a very satisfactory line to handle, as there is never any difficulty in erecting a fence, owing to the fact that all fences are made especially to order and can be set according to diagrams furnished by the manufacturer.

Hardware Merchant the Man.

FROM A NEBRASKA MANUFACTURER: Farm Fencing can be handled advantageously by Hardware dealers in the smaller towns in good farming or ranch districts. By handling Farm Fence and Gates they can oftentimes take orders by catalogue for the heavier fences. As they would become known as Fence dealers eventually, as the heavier Lawn Fence would become introduced, a few rolls of the most desirable sizes could be kept in stock. The Hardware dealer is the man to handle the Fence business in any town.

Additional Information Suggested.

FROM A MANUFACTURER IN PENNSYLVANIA: Hardware merchants can arrange with the manufacturers to furnish Iron Fencing, including Posts, Gates, &c., to suit any special shaped plot of ground, by sending a sketch or plan of the ground intended to be inclosed by the Fence. It would be advisable for the merchant to furnish some additional information pertaining to the surroundings, character of building, &c., so that such a Fence would be recommended as would be in keeping with the surroundings.

Why Not the Hardware Merchant?

FROM A MANUFACTURER IN GEORGIA: Fencing can be and is handled very successfully by marble and monument dealers and can just as easily be handled by Hardware dealers. Standard designs of Iron Fence are now made so cheaply that there is a nice margin for the Hardware dealer, even when he sells at a comparatively low figure.

Many Orders Come Through Hardwaremen.

FROM A NEW YORK STATE MANUFACTURER: While we do a certain amount of this work ourselves the orders as a rule come directly from the consumer and not through the medium of a Hardware store. There are firms in the country who make a specialty of Fencing and we believe secure a great many orders through Hardware merchants, and we see no reason why the latter cannot profitably handle work of this character. In fact every little while we receive an inquiry for Fences from Hardware dealers, which proves that they are very glad to furnish such work to their customers when an opportunity presents itself.

Furnish Catalogues, Discounts, &c.

FROM A MANUFACTURER IN OHIO: A large portion of our business is done through Hardware merchants all over the country, who send in their inquiries, usually sketches, &c., and upon which we name net prices. We also supply them with catalogues, discounts, &c., so they can submit same to their customers.

Some Merchants Don't Like the Detail.

FROM A NEW YORK STATE MANUFACTURER: Our experience for several years has been that a majority of Hardwaremen do not take the trouble to push Fencing. The only Hardware dealers who have made a success in this way are those who have in their employ men who can put the Fence in place or arrange with some outside mechanics who do this for them.

Of course there is a considerable amount of detail to put through an order of this kind, and we think that the average Hardware dealer does not care to bother with anything unless he can simply take it off the shelf and dispose of it. Yet we know that a certain number of them have made a considerable number of sales, which have netted them a good source of income, and there is no reason why any Hardwareman cannot do well in this line.

The Hardware Store of Neal & Brinker Company

Tenth Article.

IN the last article of this series a diagram was given showing the arrangement of the subcellar in the store of Neal & Brinker Company, New York, with a detailed description and illustration of a rack built to accommodate Pulley Blocks, extending the entire length of one side wall and across the rear. The accompanying dia-

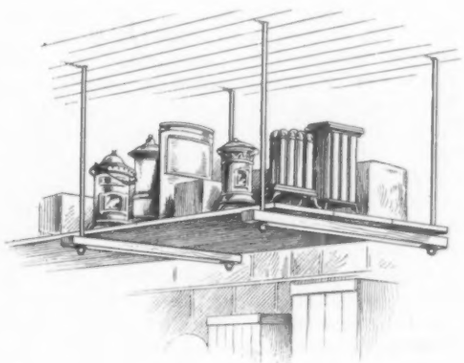


Fig. 64.—Hanging Shelf in Basement Accommodating Gas Radiators, Oil Heaters, &c.

gram, Fig. 63, shows the plan of the basement, which includes many excellent features. On the left hand wall beyond the shipping desk are a lot of bins to contain outgoing orders of regular, large buying customers, each bin being marked with the customer's name. Opposite are bins marked for each department in the store, where incoming goods are placed prior to distribution into stock. Much space in the basement is devoted to Mixed Paint, Varnish, &c., and there are also racks for Carriage and Machine Bolts, Expansive Bolts, and Cap and Skein Screws. Several rows of bins are built to accommodate

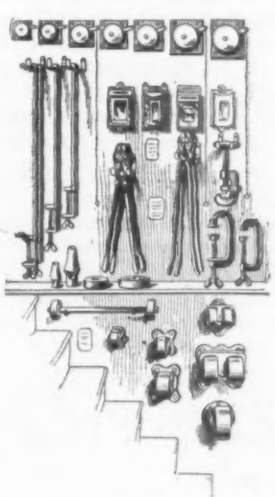


Fig. 65.—Miscellaneous Goods on Wall of Basement Stairs.

heavy, bulky goods, such as Hinges, Box Openers, Dripping Pans and the like.

Referring again to the diagram of the basement, the reader will observe two hanging shelves indicated by dotted lines. The use of these shelves is an ingenious method of economizing room, as they afford space for storing goods and at the same time leave the floor clear for getting about, moving goods, &c. The method of constructing one of these shelves, which is used to accommodate Gas Radiators, Oil Heaters and Stoves, &c., is shown in Fig. 64. The platform is laid on heavy pieces of joist suspended from the floor above by ½-inch Bridge Bolts.

Fig. 65 shows how the wall of the stairway, running

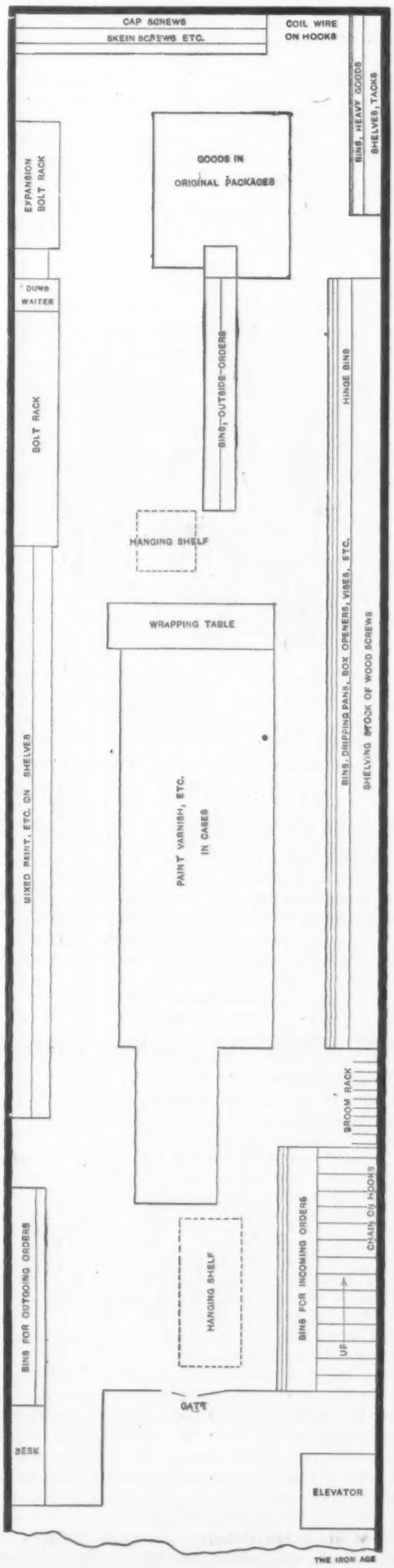


Fig. 63.—Plan of Basement.

from the main floor to the basement, is utilized to accommodate stock or samples of awkward lines of goods. But a portion of the stairway is shown in the cut, including Trip and Factory Gongs, Cabinet Makers' Clamps, Bolt Clippers, Letter Boxes and Truck Casters, with and without Axles. Among other goods suspended on this wall may be noted Floor Jacks, Linemen's Pole Climbers, Pipe Cutters, Foundry Brushes, Factory, Foundry and Blacksmiths' Bellows, Pipe Wrenches and Vises, Cement Side Walk Tools, Blacksmiths' Tongs, Gate Valves, Glue Pots and Emery Wheels.

The use of the stairway wall running from the first

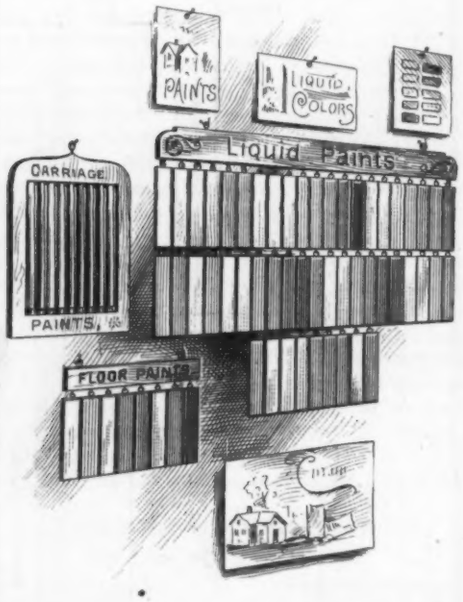


Fig. 66.—Samples of Mixed Paints and Finishes Displayed on Stairway Wall.

to the second floor is shown in Fig. 66. This is occupied by samples of Paints, Finishes, &c., a full line of which for all purposes is carried in stock in the basement, the location being indicated in Fig. 63. The prominence given to Paint samples and the extent of the stock carried in this metropolitan store are significant as indicating the increasing attention which Hardware merchants in all sections are devoting to this very satisfactory and profitable line.

(To be continued.)

BANQUET OF THE "ATKINS PIONEERS."

THREE months since workmen in the employ of E. C. Atkins & Co., Indianapolis, Ind., for 20 years or more, organized the "Atkins Pioneers," with a membership of 62 men out of the 75 on the payroll in 1886. The "Pioneers" were banqueted by the company at the Grand Hotel on the 26th ult. After partaking of an excellent dinner addresses were made by Toastmaster John H. Wilde, president of the "Pioneers," and other members, and also by H. C. Atkins, N. A. Gladding, U. A. Potter and Fred. C. Gardner, officers of the company. Many appreciative references were made to the late E. C. Atkins, founder of the business, who deservedly enjoyed the respect and affection of his workmen. A monster picnic, in which all of the 1100 employees of the works will participate, is now being planned.

The oldest veteran at the banquet was William Miller, whose connection with the Atkins works began in 1864, when Mr. Atkins occupied a little one-story building in an obscure alley of the city. Mr. Miller is now past 70, but his muscles are still as strong as most young men's, while his mind is just as clear and his enthusiasm as keen as ever.

The Hardware store of George A. Lowe Company, Ogden, Utah, was recently damaged by fire, but the entire loss was fortunately covered by insurance.

SAN FRANCISCO HARDWARE TRADE.

AN interesting and effective method of practically helping San Francisco machinists who had lost tools, as well as homes and furnishings, in the great earthquare and fire, has been undertaken by the L. S. Starrett Company, Athol, Mass., manufacturer of fine mechanical tools. Early in the period of disaster the company telegraphed $1000 cash to the Mayor of the city for relief of sufferers, which went into the general fund. As the situation developed, however, it became apparent that many mechanics, and especially machinists, must have suffered the loss of tools, which the company in a measure was desirous of promptly replacing. The company, therefore, decided to contribute $2000 to the members of the International Association of Machinists through Charles W. Meyer, financial secretary of local lodge No. 68, to whom has been sent 400 orders in triplicate for $5 worth net each of Starrett tools, which the secretary is authorized to distribute only to those needy members who have lost their tools. These orders are to be honored by any tool dealer in San Francisco, Oakland, Berkeley, Alameda, San Jose, Stockton and Sacramento, the orders remaining good until July 1. In this way deserving workmen get $5 worth of Starrett tools free and the merchant gets his usual profit. Each mechanic, likewise, can best replace what he most needs. The object of triplicating the orders was to provide one for the workman, one for the Grand Lodge, I. A. of M., at Washington, D. C., and a third to remain on record with the merchant.

Gilhuly & Ambler, manufacturers' sales agents, San Francisco, are now located in the Atlas Building, 604 Mission street. Mr. Ambler has recently become a member of the firm. This business, like many others, was burned out, but the firm is now permanently located in the building named above, which was one that stood both the earthquake and fire with very little damage.

THE DETROIT COMBINATION TOOL.

H. E. DOBSON, 120 Liberty street, New York, manager of the Eastern agency of the Detroit Tool Company, Detroit, Mich., is handling in this territory the Detroit Combination Tool, illustrated in these columns May 31, and which inadvertently were listed at the old prices of Models A and B, viz., $25 and $50 each, but which owing to many changes and betterments, should have been $40 and $55 instead. In fact, we are advised that the Model A as formerly made is not now manufactured.

THE CHICAGO RETAIL HARDWARE ASSOCIATION is planning more than the regular annual local picnic this year, the preparations including a lake trip. The association has chartered the steamer Theodore Roosevelt, running between Chicago and Michigan City, for the occasion. July 18 is the day set for the outing and the party will leave Chicago early in the morning, spending the day in Michigan City and returning in the evening. The committee in charge of arrangements consists of W. H. Bennett, George Englehardt and W. D. Costello.

BUTLER BROS., Chicago, in their June catalogue sent to retail merchants exclusively call special attention to their "Mill Clean-up Sale," embracing season's end lots from many manufacturers. Fourth of July goods are also a prominent feature of the offerings.

J. H. WHITE MFG. COMPANY, 127-137 North Tenth street, Brooklyn, N. Y., which recently purchased the E. P. Gleason Mfg. Company's Tools, Machinery and Patterns, has fitted up a new factory, corner of North Third and Berry streets, Brooklyn. It contains over 100,000 square feet of floor surface, and with the larger amount of space and additional tools and machinery the company expects rapidly to increase and considerably improve its product.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind.: Catalogue No. 43, relating to Alarm Tills, Folding Saw Bucks, Post Hole Augers, Barrel and Box Trucks, Broom and Tool Racks, Vegetable and Fruit Slicers, Kraut Cutters, Towel Rollers, Casters, &c.

GREENE MFG. COMPANY, Springfield, Ohio: Pamphlet relating to the Apollo Lawn Sweeper, which is made in 16, 20, 24 and 28 inch sweep sizes.

PARKER BROTHERS, Meriden, Conn., New York salesroom, 32 Warren street: Catalogue devoted to high grade Ejector Guns. Additional interest is given to the catalogue by half-tone cuts of feathered game.

MINNEAPOLIS BEDDING COMPANY, Minneapolis, Minn.: Catalogue illustrating and describing the E-Z-Go Baby Tender.

W. R. OSTRANDER & Co., 22 Dey street, New York: Illustrated catalogue and price-list of Alternating and Direct Current Electric Fans.

JENKINS BROS., 71 John street, New York: "Points on Packing," a booklet devoted to illustrations and description of Unvulcanized Sheet Rubber Packing.

PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: Booklet announcing that the company can now furnish Galvanized Nails under the brand of Pittsburgh Perfect. These are described as being galvanized by the hot metal process, with the best quality of spelter and cooled by special machinery without being submerged in water.

THE STAR BRASS WORKS, Kalamazoo, Mich.: Catalogue illustrating and describing Trolley Wheels and Harps.

UNION COMPUTING MACHINE COMPANY, 3 Union Square West, New York: Catalogue illustrating and describing the Union Cash Register, made for use in connection with American, French, Russian, Spanish, Austrian, Italian and English money.

NATIONAL METAL EDGE BOX COMPANY, 407-415 North Eighth street, Philadelphia, Pa.: Illustrated descriptive catalogue of Metal Edge Paper Boxes.

THOMAS HALL, 255-257 Thirty-ninth street, Brooklyn, N. Y.: Circulars illustrating Twist Drill Grinders and Countershafts.

COLONIAL SUPPLY COMPANY, Wellsville, N. Y.: Booklet devoted to the Rose Automatic Sharpeners and Grinders, including devices for use with Carvers, Scissors and Knives.

VICTOR STAMPING COMPANY, Loveland, Ohio: Circular illustrating Coal Hods, with water tight seams and extra heavy oval bottoms.

NATIONAL CYCLE MFG. COMPANY, Bay City, Mich.: Illustrated catalogue and price-list of Bicycles, which are shown in several models. The company is also offering parts for Automobiles, to order, which it claims are accurately made.

UNITED STATES GRAPHITE COMPANY, Saginaw, Mich.: Printed matter relating to Graphite Lubricants, Paints and Greases.

CLARK MFG. COMPANY, Buffalo, N. Y.: Catalogue and price-list illustrating Blind and Shutter Hinges, Stove Pipe Dampers, Gate Hinges and Latches, Door Butts, Spring Hinges, Sash Pulleys, Sash Cord Irons, Shelf Supports, Sink Brackets and Door Pulls.

D. EDDY & SONS COMPANY, Boston Mass.: Illustrated price-list of Refrigerators and Ice Chests.

EMPIRE RUBBER MFG. COMPANY, Trenton, N. J.: Catalogue devoted to Hose, Belting, Packing, Mats and Matting, Rubber and Enameled Carriage Cloth, Auto Tire Protectors, &c.

ELLER MFG. COMPANY, successors to J. H. Eller & Co., Canton, Ohio: Illustrated catalogue devoted to Metal Ceilings and Side Walls, Wainscoting, Stamped Ornaments, Cornice, Crestings, Finials, Vanes, Ventilators, Imitation Pressed Rock Faced Brick and Stone Sidding, &c.

STEWART IRON WORKS COMPANY, Cincinnati, Ohio: A budget of illustrated catalogues relating to Fencing, Gates, &c.; Park, Cemetery and Lawn Furniture; Vases, Stable Fixtures, Tree Guards, Posts, Ornamental Iron and Wire Work, Jails, Prison Work, &c.

J. S. WOODHOUSE, 191 and 195 Water street, New York: Illustrated catalogue N of 80 pages containing a large varied assortment of Agricultural Implements for farm, field and garden. This business was established in 1843.

THE WILLIAM SUMNER BELTING COMPANY, Tolland, Conn.: Catalogue devoted to the Underwood Patent Cotton Leather Belting; also Round Edge Cotton Leather, Patent Solid Round, Twisted Round, Watch Twist and Angular or V-Belting.

MARTIN SKATE COMPANY, Boston, Mass.: Catalogue of the Martin Folding Pocket Ice Skates and Wallets. Rink, Hockey and Roller Skates are illustrated.

SANDSTROM SHORT-TURN BUGGY COMPANY, Indianapolis, Ind.: Catalogue illustrating high grade business and pleasure Vehicles, equipped with the patented Sandstrom Short-Turn Gear, which permits a vehicle to be turned around in very limited space.

FLETCHER, TERRY & Co., Forestville, Conn.: Catalogue illustrating a line of Wheel Glass Cutters, Circle Glass Cutters, Combination Vest Pocket Tool, Soldering Sets, Wood Key Faucets, Can Openers, Tack Pullers, &c.

PYRAMID POST & POLE COMPANY, Cedar Rapids, Iowa: Circulars illustrating Fence Posts, Street Name Posts, Railroad Mile Posts, Telephone and Telegraph Poles.

RACINE BOAT COMPANY, Racine, Wis.: Illustrated catalogue and price-list of Gasoline and Steam Launches, Sailing Yachts, Row Boats, Canoes, Duck Boats, &c.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM REUTER-SCHILLINGER HARDWARE COMPANY, corner Eighth and Main streets, Cincinnati, Ohio, which has purchased the business of the wholesale and retail firm of Rendigs Hardware Company. Messrs. Reuter and Schillinger are both well known to the Hardware trade of the Middle West through their long association with the Boebinger Hardware Company of Cincinnati.

FROM C. H. PHILPOTT, 135 Fifth street, San Francisco, Cal., who carries a stock of Shelf and Builders' Hardware, Tools and Cutlery.

FROM HUNTER HARDWARE COMPANY, which has succeeded to the business of J. C. Heim, in Hunter, Okla. In addition to a retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods, the company has added a full line of Harness, Collars, Pads, &c.

FROM BRIDE BROS., who have recently established a retail Hardware business in Metamora, Ill. The stock includes Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods. They also install heating and lighting plants.

FROM W. F. FULLMAN of North Brookfield, Mass., who has moved his Hardware business to a new location on Summer street. His stock includes Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils. He has recently added Cutlery, Skates, &c., to his former lines.

FIFTEENTH ANNIVERSARY OF AMIOT, LECOURS & LARIVIERE.

THAT the possession of large capital is not essential to the building up of a prosperous business is strikingly shown in the case of the house of Amiot, Lecours & Lariviere, Incorporated, Montreal, Quebec. A sketch of the career of this enterprising and resourceful Hardware firm may prove interesting and suggestive to our readers. The business was established on September 8, 1889, by Albert Amiot, who was then 19 years old, and J. Ernest Lecours, one year older. The beginning of the house was very modest, the stock formerly carried by Louis Meunier, amounting to $2000, being purchased on time—$50 a month for the first eight months and $100 a month for the balance. The payment of the stock was thus accomplished in two years. The original capital put into the business by the young men was exactly $418.78, which was used in buying a horse and wagon and a little stock to sort up the Meunier purchase. On January 1, 1890, a few months after starting, they had made a turn over of $29,210.14, and had increased their capital to $5102.97. Much energy and hard work and rigid economy had brought about this very creditable and encouraging showing. Mr. Amiot looked after the inside work of the store while Mr. Lecours piloted the delivery wagon and solicited orders outside.

On January 1, 1891, Fred, C. Lariviere, a brother-in-law of Mr. Amiot joined the firm. Mr. Lariviere, who is now president of the corporation, contributed nothing to the capital, all of his earnings having been placed in real estate. During 1891 the business of the firm aggregated $72,236.19, while the capital had increased to $25,497.92. In 1894, when the annual business had reached $109,828.19 and the capital $51,015.96, it was determined to build the present store, which is 40 x 75 feet, four stories. The original store was 20 x 75 feet in dimensions. The cost of the new building, with the land on which it stood, $44,000. While to many it would appear a very hazardous enterprise to lock up such a large proportion of the capital of the firm the results achieved by the advertising secured by this new building proved that no mistake had been made. Three years after the erection of the building the annual turn over amounted to $198,428.68 and the capital had increased to $98,135.67.

The continued growth of the business induced the firm to form a joint stock company in 1902, when the turn over reached $297,335.82. The company was incorporated with a paid up capital of $100,000. This action came at a most opportune time, as Mr. Amiot was shortly aften taken ill and died of pneumonia within eight days. Had it not been for the incorporation the position of the house would have been a difficult one. The shares of stock held by Mr. Amiot were retained by his estate. Since 1902 the trade of the house has grown continuously, and in 1905 the turn over was $371,297.80. Since the incorporation the company has not only paid a dividend of 6 per cent., but has carried $17,000 to the reserve fund.

As responsible for this splendid record of success and prosperity Mr. Lariviere and his associates refer to the prime importance of a knowledge of the business in all its details coupled with hard work and economy and persistent and energetic administration in all departments.

The fifteenth anniversary of the business dating from the time of Mr. Lariviere's first connection with it, was celebrated in January last. In connection with the anniversary an attractively framed picture was distributed, in which well executed portraits appeared of the officers and more than two score employees, views being also presented of the original store and the present imposing establishment.

MISCELLANEOUS NOTES.

Fletcher, Terry & Co.

Fletcher, Terry & Co., Forestville, Conn., have recently put on the market Special brand wheel glass cutters Nos. 1, 2 and 3, having, in the order named, light metal handle, light metal handle with knob on end, and cocobola polished handle. These cutters are recommended by the manufacturers as adapted to the use of those who require a fine, easy cutting wheel, and samples will be cheerfully sent for trial.

Miniature Extra Hollow Ground Razors.

George Wostenholm & Sons, Sheffield, England, New York branch in charge of George Quirk, 105 Chambers street, have recently put on the market a miniature razor, branded as customary I. X. L., which has some distinctive features. The blade is both shorter and narrower than usual, being only 2½ inches long and 9-16 inches wide, on the principle that there's no surface on a man's face large enough to use all of the cutting edge of a larger razor at one time. A pair of these razors were originally made in Sheffield according to the specifications of William Field, a veteran salesman of the house, for personal use, and proved so satisfactory in continual practice that they are now added to the regular line. They are made of a special high grade steel, as are all their razors, are extra hollow ground, and so etched on the blade, have a file tang, gimp back, and are mounted to what is known in the trade as square hard rubber handles.

F. Smith & Son.

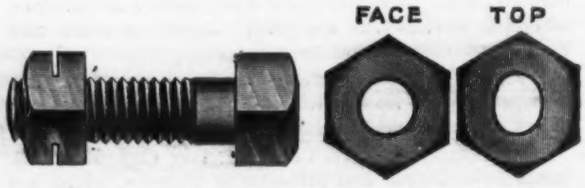
F. Smith & Son, Clinton, Iowa, have added machinery to manufacture ironing boards and clothes bars or horses. The firm have heretofore been engaged in the manufacture of the Bull Dog brand of ladders, and the above articles will be made in addition to this line.

Page Woven Wire Fence Company.

Page Woven Wire Fence Company, Adrian, Mich., and Monessen, Pa., is finishing the surplus of its mills not required for fence production in the following high grades of wire: Special telephone and telegraph wire, high carbon special wire, spring, rope, broom, tinned mattress, liquor bright and coppered wire. The company is thus enlarging its field of operations in a manner not indicated by its catalogue.

The Bull Dog Lock Nut.

The Railway Lock Nut Company, 77 Jackson Boulevard, Chicago, Ill., is offering the lock nut shown in the accompanying cuts. In manufacture the sides of the nut are slotted to allow the metal to separate, after which the upper half is pressed. The face of the nut is at all times the same as any ordinary nut and is started



The Bull Dog Lock Nut.

on the bolt as usual. The top of the nut, as shown, is slightly elongated, but conforms to the bolt as it is put on with a wrench. The elasticity of the steel makes the top act as a spring, which is constantly binding on the bolt. If the nut is removed it springs back to its original oblong shape. It is explained that the nut can be given any tension desired, which fits it for practical use on the most delicate machinery and for the roughest railway work. The nut can be furnished in finished, semifinished or plain, hexagon or square, V or U. S. standard thread, or any special size or thread. The nuts may be removed and replaced as often as desired and may be used in any place and upon any bolt, without washers or special preparation. The company states that the nut does not loosen under the most severe tests of continual jar and vibration.

Full Mounted Hercules Screw Plates.

The E. F. Reece Company, Greenfield, Mass., is introducing full mounted screw plates, as shown in the accompanying cuts, the distinctive feature of which is that no changing of dies is required, as a stock is provided for each die, so that dies are always ready for instant use. The goods are put up in sets or complete assortments, including stocks, dies and taps, as illustrated in Fig. 2. The plates are alluded to as being strongly and substantially constructed, but at the same time correctly proportioned and not too heavy. In this connection it is

Fig. 1.—Full Mounted Hercules Screw Plate.

pointed out that the stocks are rightly proportioned for all of the different sizes which a set is intended to cut. The stocks have knurled handles, to insure a firm hold even when the handles are oily. The stocks contain the Reece adjustable dies, the same as are furnished in the Reece adjustable guide screw plates. The manufacturer explains that one advantage in having more than one

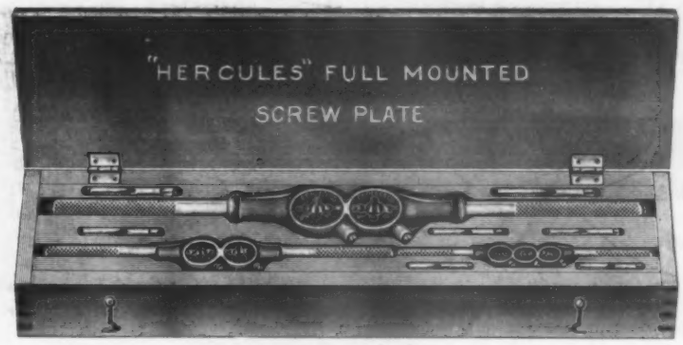
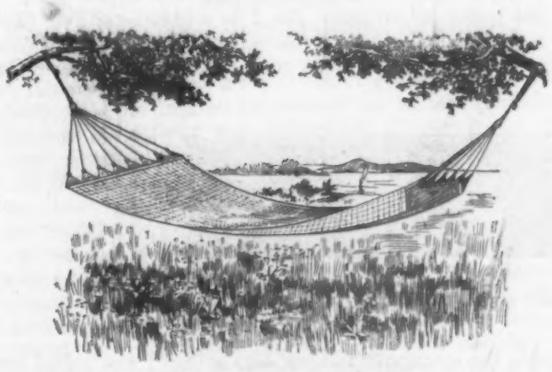


Fig. 2.—Assortment of Hercules Full Mounted Screw Plates.

die in a stock is that the screw plates can in this way be furnished at a low price, because less labor and material are required in making them, while not reducing the efficiency of the plates. The goods are furnished in four standard assortments and may be obtained with or without the wooden cases.

White Mountain Hammock No. 400.

R. B. McKim, 118 Pearl street, Boston, Mass., is putting on the market the hammock shown herewith. It is supplied with adjustable heavy manila ropes, ready to hang. The ropes are furnished with patent regulating rings by which the hammock can be raised or lowered at will. The body of the hammock is hand made by a



White Mountain Hammock No. 400.

special method, with double warp, and the suspension cords are of extra strong material, which, combined, make the hammock strong and convenient. The manufacturer guarantees it to sustain 1000 pounds weight. It is recommended for the use of sportsmen, campers or those on vacation, as it can be folded in a small space and may be packed in a bag or trunk.

Volo Sewing Machine.

The accompanying cut represents a new sewing machine recently put on the market by Simmons Hardware Company, St. Louis, Mo., to be sold through hardware merchants. The company has worked on the machine for many months, completing it in every detail, and alludes to it as representing a departure from old ideals. The best quarter sawed white oak is used in its construction, and the table is made of five successive layers of thoroughly seasoned wood to prevent checking or warping. The machine is cast from the best iron and all mechanical parts are of the highest grade nickeled tool steel. The frame is strongly reinforced, leaving liberal room for the knees. The leg brace is supplied with oil cups to catch superfluous oil which would otherwise fall from the treadle bearings to the floor or carpet. All oil holes are covered with caps to keep out dust and dirt. The belt is thrown off and replaced automatically. The belt coupler permits of the belt being shortened by simply turning

Volo Sewing Machine.

it with the coupler. The drop head is raised automatically by lifting the hinged cover. The case for the head of the machine is dust proof, it is explained, rendering it impossible for the dust to enter when the machine is not in use. The table is extra wide, to provide increased facilities for handling sewing. All the wood work is given three separate coats of varnish, each one of which, after drying, is hand rubbed. The roller bearings with which the machine is supplied are said to save 80 per cent. of friction. The bed plate fits smoothly into a recess in the table, making it flush with the top surface and offering no obstruction to work passing over it. The arm is extra high, allowing liberal work space. The needle is held in place by a clamp which locks it securely, while a turn of the clamp releases the needle when another size is desired. Directly before the operator, on the slide over the shuttle, is a list indicating the size of needle that should be used with each number of spool cotton. Cotton, linen or silk thread can be used on the machine. The bobbin winder is automatic and operates without any spring adjustments. The shuttle is self threading, and in changing the stitch the thumb screw of the indicator on the machine arm is adjusted and the length is immediately regulated. The range is from 6 to an inch up to 32 to an inch. The tension is of the improved disc type and so arranged that it can be instantly adapted to any fabric or thread. The feed motion operates on both sides of the needle to insure an even carriage of the goods, and the space between foot presser and feed can be regulated to all thicknesses of cloth. It is stated that the machine will sew any material from the most delicate fabric to heavy, non-yielding carpet without breaking or bending the needle, turning its point or snapping the thread. The manufacturer claims that the mechanism and working parts of the machine are simple in the extreme, and a written guarantee for five years accompanies each machine.

Utility Corn Popper.

The corn popper shown in the accompanying cut is made entirely of sheet iron. It is 8 inches wide, 9 inches long, 3¾ inches high and is made in four quart size only. The handle is removable for shipping and being of metal will not burn off when in use. The front portion

Utility Corn Popper.

of the sliding lid is perforated, through the holes of which unpopped kernels can be sifted out. The corn can be popped in seasoning, and with the popper pop corn dry or cracker jack can be made. The popper can be used on any heater or cooking stove or in any furnace. The popper has been recently put on the market by the Utility Manufacturing Company, Sturgis, Mich.

Neversplit Tool Handle.

Niagara Handle & Ferrule Company, Buffalo, N. Y., is offering the tool handle shown herewith. The wood is white birch and the ferrule pressed steel. Special

Neversplit Tool Handle.

claims are made for the durability of the wood and ferrule. When the wood is worn out the ferrule can be refitted at a nominal cost. The peculiar shape permits driving the file or other tool firmly into the handle, centering itself perfectly, where, it is explained, it is held rigidly, doing away with the necessity of continually tapping the tool back into place. The point is made that the handle does not split and consequently does away with the risk of accident to workmen through the handle splitting when doing heavy work. The handle is made in five sizes, for 4 to 20 inch files. Extra woods are also sold by the manufacturer.

Semicircular Level, Plumb and Inclinometer.

Bradford Union Mfg. Company, Bradford, Pa., is placing on the market the circular level, plumb and inclinometer illustrated herewith. It is made of cherry or mahogany highly polished, the top and bottom bound with solid aluminum, milled perfectly straight and true. It is stated that there is absolutely no warp or twist. In addition to being a level the device gives any degree or angle; also the rise or fall to the foot graduated to ¼ inch. It can be readily mounted on a tripod for determining

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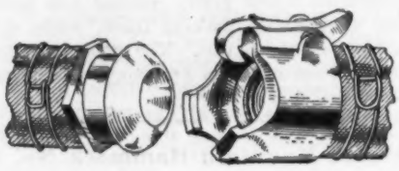
grades, foundations and excavations. The level determines exactly the position of an object with regard to a perpendicular, horizontal plane or incline, and defines the degrees in inclination from a perpendicular or a horizontal plane. A further use is ascertaining the hight of a building or other object at varying distances. The device has a semicircular glass tube, with a graduated scale above which represents the number of inches or fractional parts thereof on rise or fall to the foot. For example: When the center of the air space is on ¼, ½, ¾ or 1 inch, it means that there is that much of an incline to the foot. Thus in a distance of 2 feet, multiply by 2; in a distance of 10 feet, multiply by 10; in a distance of 50 feet, multiply by 50, &c., to any distance desired, as it makes no difference as to the length of the level. Below the glass tube is the 90 degree scale, figured both ways. Thus when the center of air space registers 30 degrees on the upper set of figures the lower set reads 60 degrees. All parts of the device can be readily adjusted. It is explained that with the device all figuring is dispensed with, the air space finding its own level and registering the same at any angle or pitch, wherever it may be placed.

Snap Hose Coupling.

Nelson & Morrison Company, Box 57, Boulder, Col., is introducing the snap hose coupling shown in the accompanying cut. It is made of brass in two parts: No. 1 on which are the locking dogs and snap, and No. 2 having a cone shaped head. No. 1 is interiorally threaded with the ordinary hose thread, while No. 2 is made either threaded to screw into the old style coupling or corrugated to fasten into the end of the hose. In No. 1 is a rubber washer, so made that the cone head of No. 2 will press sufficiently against the washer to make a tight joint when the water flows through without pressure, while the harder the pressure is the tighter the joint becomes. When placed between two pieces of hose already fitted with the old style coupling the No. 1 is screwed on the old style male and No. 2 is screwed into



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Chase Patent Folding Rack Truck.

The Chase Foundry & Manufacturing Company, Columbus, Ohio, is offering the folding rack truck shown in the accompanying cuts. In Fig. 1 the truck is shown

Fig. 1.—Chase Patent Folding Rack Truck.

with the rack in position to be used. The point is made that the load possible to carry on this truck could not be carried on an ordinary hand truck and that a large platform truck could not be handled in the same space. In Fig. 2 the truck is shown with the rack folded for

Fig. 2.—Chase Truck with Rack Folded.

use as an ordinary hand truck. In this position it is a complete hand truck, the folding rack, it is remarked, interfering in no way with its use, while it adds strength and durability to the truck.

Empire Blind and Transom Adjusters.

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Fig. 1.—Empire Blind Adjuster. Outside View.

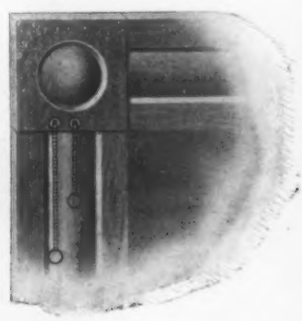

Fig. 2.—As Chains Appear Inside of Window Casing.

from outer side by a hooked end wire, after which the rings are attached. The remainder of the work of attachment needs no explanation here, five diagrammatic figures with descriptive matter accompanying each set. Thus any one, even a small child, can open or close the blinds with ease without touching screen, window or curtain, and at the same time nothing but the two chains are visible inside. The blind adjusters, sold in pairs, are

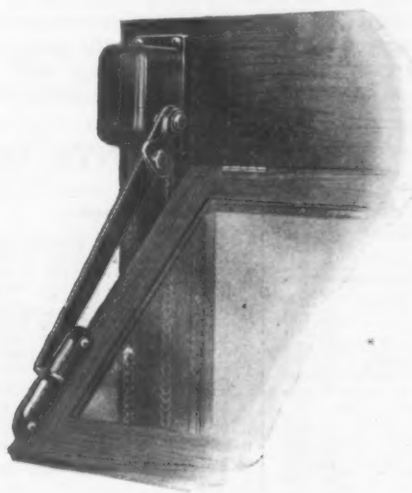

Fig. 3.—Empire Transom Adjuster.

made in four sizes with arms 9, 12, 15 and 18 inches long for blinds up to 13 inches wide, 13 to 16 inches, 16 to 19 inches and 19 to 24 inches wide respectively. There is also obtainable a blind adjuster, made from specially prepared metal, which will not rust when exposed to salt air, which is known as the nonrustible Empire blind adjuster. These goods are black japanned, but other colors or finishes can be furnished to order. The Empire transom adjuster, Fig. 3, is practically identical with the blind adjuster, except for a few minor modifications. Like the blind adjuster, the transom is swung either way by a pull on either of the two chains. The transoms can be pivoted in the center, hinged at top or bottom,

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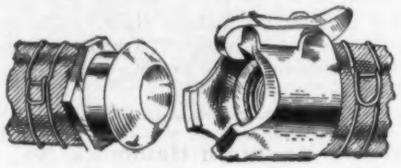

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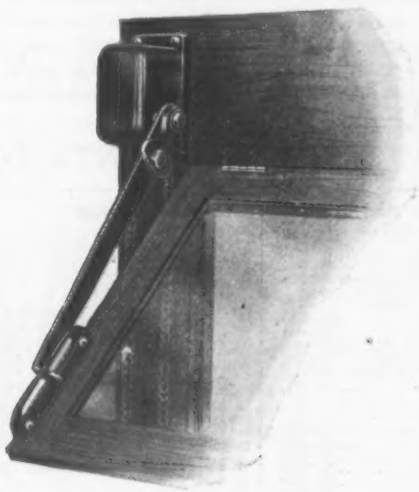

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swing in or out and be operated with this device. The adjuster can also be applied to either right or left side. They are supplied regularly in six finishes: Bright bronze, bright brass, dull and antique brass, antique copper and nickel plate.

Improved Type of Hotel Lock.

Sargent & Co., New Haven, Conn., and 149-153 Leonard street, New York, have just put on the market an improved type of hotel lock, as here illustrated. There are two patterns of this lock made, 6250 P, with key holes below the knob, and 6260 P, with key holes above it, this feature being the only difference between them. The

Fig. 1.—Improved Hotel Lock.

dimensions are 6 x 3½ inches with 2¾ inches backset. The fronts are of bronze metal and there are three heavy bronze bolts and three wrought steel tumblers. The remarkable feature of the locks is the arrangement of the interior mechanism, so that it is possible to operate them with four different keys. First there is the guest key, which can be used in only one lock, and that when not locked on the inside, two of which are supplied with each lock. Next in order is the master or floor key, which operates the locks on all rooms on a floor, when not locked on the inside, designed for a maid's use. Then comes the grand master key, which throws the lock bolts on all room doors in the hotel, when not locked from the inside. The fourth style of key is the emergency key, by the possession of which the locks on all room doors in the hotel can be unlocked from the outside, even when locked from the inside with the guest key in the lock. This key is designed exclusively for the use of the proprietor or manager, and kept, for instance, in the office safe, accessible only to the owner or his designated representative, for use only in case of great necessity, as, for example, fire, sickness, suicide or other unusual occurrence in the room. When ordered with these keys, the locks are arranged so that when locked from the inner side by the

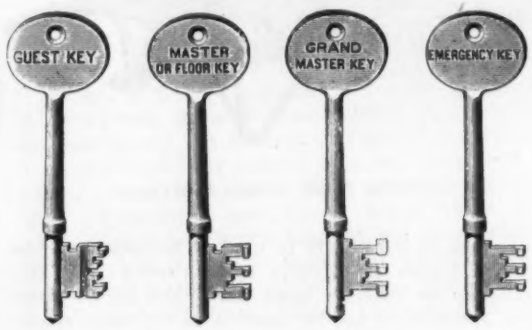

Fig. 2.—Showing the Four Types of Keys.

key they cannot be operated from the corridor by the guest key, the master or floor key or the grand master key, but can be operated by the emergency key; and while the door is locked on the inside with the guest key the key cannot be taken out, thus always insuring the key being in the lock in case of fire or other peremptory necessity for its use. The guest key is operative from the inside at all times, whether or not the lock is locked from the outside. The outside knob regularly operates the latch bolt at all times except when the door is locked from the inside, at which time the outside knob is stationary. The advantage of the stationary knob is to indicate that the room is occupied, so that the maid will not unnecessarily awaken or disturb an occupant by inserting the master or floor key in the lock.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.	
Linseed, City, raw	.40	@41
Linseed, City, Boiled	.41	@42
Linseed, State and West'n, raw	.36	@38
Linseed, raw Calcutta seed	.68	@..
Lard, Extra Prime, Winter	.71	@72
Lard, Extra No. 1	.52	@63
Lard, No. 1	.42	@44
Cotton-seed, Crude, f.o.b. mills	.30	@30½
Summer Yellow, Prime	.37½	@38
Summer Yellow, off grades	.36½	@37
Sperm, Crude	.55	@..
Natural Spring		@..
Bleached Spring		@..
Natural Winter	.63	@65
Bleached Winter	.66	@67
Bleached Winter, Extra	.68	@69
Tallow, Prime	.51	@53
Whale, Crude	.32	@33
Natural Winter	.42	@44
Bleached Winter	.44	@46
Extra Bleached Winter	.46	@50
Menhaden, Brown, Strained	.28	@29
Light, Strained	.27	@30
Bleached, Winter		@..
Extra Bleached, Winter		@..
Southern		@..

	₱ lb	
Cocoanut, Ceylon		6¼@ 7
Cocoanut, Cochin		8 @ 8¼
Cod, Domestic, Prime	.30	@31
Cod, Newfoundland	.35	@37
Red, Elaine	.37	@40
Red, Saponified		4¾@ 5
Olive, Italian, bbls	.57	@60
Neatsfoot, prime	.48	@49
Palm, Logos		6 @ 6¼

Mineral Oils—

Black, 29 gravity, 25@30 cold test	₱ gal.	10¼@11½
Black, 29 gravity, 15 cold test		11½@12½
Black, Summer		10½@11½
Cylinder, light filtered	.18	@19
Cylinder, dark filtered	.16	@17
Paraffine, 903-907 gravity		13½@14
Paraffine, 903 gravity		12½@13
Paraffine, 883 gravity		10¾@10¾
Paraffine, Red		12½@14

In small lots ½¢ advance.

Miscellaneous—

Barytes:		
White, Foreign	₱ ton	$17.50@19.00
Amer. floated	₱ ton	19.00@.....
Off color, No. 2	₱ ton	13.50@15.00
Chalk, in bulk	₱ ton	3.00@ 3.25
Chalk, in bbls	₱ 100 lb	.@ .35
China Clay, English,	₱ ton	12.00@17.00
Cobalt, Oxide	₱ 100 lb	2.50@ 2.60
Whiting, Common	₱ 100 lb	.43@ .48
Whiting, Gilders	₱ 100 lb	.50@ .55
Whiting, Ex. Gilders	₱ 100 lb	.55@ .60

Putty, Commercial—₱ 100 lb

In bladders	$1.70	@1.85
In bbls. or tubs	1.20	@1.40
In 1 lb to 5 lb cans	2.65	@2.95
In 12½ to 50 lb cans	1.80	@1.90

Spirits Turpentine—₱ gal.

In Oil bbls		60¼@60¾
In machine bbls		60¾@61¼

Glue—

	₱ lb	
Cabinet	.11	@15
Common Bone	.7	@ 9
Extra White	.18	@24
Foot Stock, White	.11	@14
Foot Stock, Brown	.8	@11
German Hide	.12	@15
French	.19	@40
Irish	.13	@16
Low Grade	.9	@12
Medium White	.14	@17
Fine Orange	.48	@60
A. C. Garnet	.41	@42½
D. C.	.56	@60
Octagon B		@62
T. N.	.44	@45
V. S. O.	.53	@65

Gum Shellac—

	₱ lb	
Bleached Commercial		@40
Bone Dried		@50
Button	.40	@50
Diamond I.	.53	@55
Fine Orange	.48	@60
A. C. Garnet	.41	@42½
D. C.	.56	@60
Octagon B		@62
T. N.	.44	@45
V. S. O.	.53	@65

Colors in Oil—

	₱ lb	
Black, Lampblack	.12	@14
Blue, Chinese	.56	@46
Blue, Prussian	.32	@36
Blue, Ultramarine	.13	@16
Brown, Vandyke	.11	@14
Green, Chrome	.12	@16
Green, Paris		@24
Sienna, Raw	.12	@15
Sienna, Burnt	.12	@15
Umber, Raw	.11	@14
Umber, Burnt	.11	@14

White Lead, Zinc, &c.—

	₱ lb	
Lead, English white, in Oil		9½@ 9¾
Lead, American white, in Oil:		
Lots of 500 lb or over		@ 7¼
Lots less than 500 lb		@ 7¾
In Barrels		@ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price		@ ¼
Lead, White, in oil, 12½ lb tin pails, add to keg price		@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price		@ 1¼

Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	₱ lb	
Lead, White, Dry, in bbls		@ 6¾
Zinc, American, dry		4¾@ 5
Zinc, French:		
Antwerp, Red Seal, dry		8¾
Antwerp, Green Seal, dry		9¾
Paris, Red Seal, dry		9¼
Paris, Green Seal, dry		10½
Zinc, V. M. French, in Poppy Oil:		
Green Seal:		
Lots of 1 ton and over		12¾@13½
Lots of less than 1 ton		12¾@13¾
Zinc, V. M. French, in Poppy Oil:		
Red Seal:		
Lots of 1 ton and over		11¾@11¾
Lots of less than 1 ton		11¾@12¼

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	₱ lb	
Black, Carbon	.5	@10
Black Drop, American	.4	@ 6
Black Drop, English	.5	@15
Black, Ivory	.16	@20
Lamp, Com		4½@ 6
Blue, Celestial	.4	@ 6
Blue, Chinese	.29	@32
Blue, Prussian	.27	@30
Blue, Ultramarine		4½@15
Brown, Spanish		½@ 1
Carmine, No. 40		$3.10@3.20
Green, Chrome, ordinary		3½@ 6
Green, Chrome, pure	.17	@25
Lead, Red, bbls., ½ bbls. and kegs:		
Lots 500 lb or over		@ 7¼
Lots less than 500 lb		@ 7¾
Litharge, American, bbls		@ 7¼
Ocher, American	₱ ton	$8.50@16.00
Ocher, American Golden		2¼@ 3½
Ocher, French		1¼@ 2½
Ocher, Foreign Golden	.3	@ 4
Orange Mineral, English	.10	@12
Orange Mineral, French		10¾@12
Orange, Mineral, German		8½@10
Orange, Mineral, American		8½@ 8¾
Red, Indian, English		1½@ 8½
Red, Indian, American	.3	@ 3¾
Red, Turkey, English	.4	@10
Red, Tuscan, English	.7	@10
Red, Venetian, Amer.	₱ 100 lb	$0.50@1.25
Red, Venetian, English	.100 lb	$1.15@1.75
Sienna, Italian, Burnt and Powdered	.3	@ 9½
Sienna, Ital., Raw, Powd	.3	@ 6½
Sienna, American, Raw		1½@ 2
Sienna, American, Burnt and Powdered		1½@ 2
Talc, French	₱ ton	$15.00@30.00
Talc, American	₱ ton	15.00@25.00
Terra Alba, French	₱ 100 lb	90 @1.00
Terra Alba, English	₱ 100 lb	90 @1.00
Terra Alba, American,	₱ 100 lb, No. 1	.70 @80
Terra Alba, American,	₱ 100 lb, No. 2	.60 @65
Umber, Turkey, Bnt. & Pow		2½@ 3½
Umber, Turkey, Raw & Pow		2½@ 3½
Umber, Burnt, Amer		1½@ 2
Umber, Raw, Amer		1½@ 2
Yellow Chrome	.12	@14
Vermilion, American Lead	.10	@25
Vermilion, Quicksilver, bulk		@60
Vermilion, Quicksilver, bars		@61
Vermilion, English, Import	.65	@70
Vermilion, Chinese		$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....℔ lb 6¾@7 ¢
Hay-Budden, Wrought.....9@9¼ ¢
Horseshoe brand, Wrought.....9@9¼ ¢
Trenton .....℔ lb 9@9¼ ¢

Imported—

Peter Wright & Sons.....℔ lb 10¼ ¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co.....33⅓%

Augers and Bits—

Com. Double Spur.....75@75&5%
Jennings' Patn., rey. finish.... 50&10%@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $24; No. 2, $18.....60%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—

Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—

Ship Augers.....45&5@—%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts— See *Handles, Mechanics' Tool.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered..gro.63@66¢
Unhandled, Patent..gro.66@70¢
Pey Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 68@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Barnwood 40%

Awl and Tool Sets— See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights:
First Quality.....$4.75@5.00
Second Quality.....$3.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease — See *Grease, Axle*

Axles— Iron or Steel

Concord, Loose Collar...4¼@4¾¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...5¼@5¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4@4½¢
Half Patent:
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—

Common and Concord, not turned lb., 4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—

Caldwell new list.....50%
Pullman .....50&10@60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50&10%
Straight Balances.....40@50%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire— See *Wire, Barb.*

Bars— Crow—

Steel Crowbars, 10 to 40 lb.... per lb., 3¼¢

Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—

Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—

Holt-Lyon Co.:
Holt, per doz., No. 1, Jap'd, $1.20; No. 1, Tin'd, $1.50; No. 8, Jap'd, $2.00; No. 2, Tin'd, $2.25.
Lyon, Jap'd, per doz., No. 2, $1.25; No. 3, $1.50.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.: T. & S. Dover.....$6.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R. M. Co.)..℔ gro. net, $6.00

Bellows—

Blacksmith, Standard List.. 60&10@70&10%

Hand—

Inch..	*6*	*7*	*8*	*9*	*10*
Doz...	*$4.75*	*5.70*	*6.65*	*7.60*	*8.85*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*
Doz...	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Net Prices.

Bells— Cow—

Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—

Hand Bells, Polished, Brass.60&10%
White Metal.....60%
Nickel Plated.....50&10&60%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—

Farm Bells.....lb. 2½¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 50%
Table Call Bells.....50@50&10%

Belting— Leather—

Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops—

See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $1.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain, Parts, Spokes.....50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—

Common Wooden.....70&10@75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....40%
Paper Embossed.....40&10%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread): ⅝ x 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle $3.00 list May 24, '99 80%
Bolt Ends, list Feb. 14, '95.... 65&10@—%
Machine, ⅝ x 4 and smaller 75@—%
Machine, larger and longer.. 65&5@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square 66⅔% &10@66⅔% &10&10%
Ives' Patent Door.....60%

Plow and Stove—

Plow .....65&10@—
Stove .....87½&10@—

Tire—

Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84... 80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch	*2¼*			*2½*
Per doz.....	*$8.65*			*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65@$1.75; No. 3, $2.50 each...25%

Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.: Nos. 240 to 460, 30%; Nos. 50 and 60.....35%

Braces—

Comm'n Ball, American. $1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P. S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley, 35%; Victor.....45%

Brackets—

Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf, 75%; Sink...50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—

See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—

Price per dozen.

Quart.....	*10*	*12*	*14*
Water, Regular...	*1.40*	*1.70*	*1 90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—

Hoosier.....℔ gro. $36.00

Bull Rings— See *Rings, Bull*

Butts— Brass—

Wrought, list, Sept., '96..15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—

Discount.
Reversible and Broad.75&5%
Light Reversible, Light Narrow .....75&10%
Loose Joint, Narrow, L'ht Inside Blind, etc....75%
Back Flaps, Table, Chest. .....70&10%

Extra, 10&10%

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, 5%; 1200, 33⅓%; 200, 300, 600, 900 .....40&10%
Hendryx Bronze: Series 700, 800.... 40&10%
Hendryx Enameled.....40&10%

Calipers— See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 4¼¢
Sharp, 1 prong...per lb., 4¼@4½¢
Burke's Blunt, 4@4¼¢; Sharp, 4½@4¾¢

Gautier, Blunt, 4@4¼¢; Sharp 4½@4¾¢
Perkins', Blunt, ₰ lb, 3.65¢; Sharp, 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.55@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd..$1.90
B. B. Caps, Round Ball....$1.40
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$3.70	3.90	4.95	4.20	4.05	3.95	3.90
⅝	¾	⅞ to 1		1⅛ to 1¼ inch.		
$3.85	3.70	3.65		3.80		

German Coil.....60&10&10@70%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '97.....60&10&10%
Covert Mfg. Co., Halter.....35&5%
Covert's Saddlery Works Halter.....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring..$25.00
6½—6-2, Str'ght, with ring..$26.00
6½—8-2, Str'ght, with ring..$30.00
6½—10-2, Str'ght, with ring..$35.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....60&10%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10%
Brass.....60&10%
Safety Chain.....70&10%
Gal. Pump Chain.....lb. 4@4½¢
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion.....40%
Covert Sad. Works:
Breast, Hold Back, Rein.....70%
Oneida Community:
Am. Dog Leads and Kennel Chains, 40@40&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—

Oneida Community:
Copper Chain, 60&5%; Steel Chain, 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 38@40¢
Carpenters' Red.....gro. 35@35¢
Carpenters' White....gro. 28@30¢
See also Crayons.

Checks, Door—

Bardsley's.....45%
Pullman, per gro.....$54.00
Russwin.....40%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—
Socket Framing and Firmer

Standard List...75&10@75&10&5%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....60%
Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
L. & I. J. White.....30@30&5%
L. & I. J. White, Tanged.....25&5%

Tanged—

Tanged Firmers....33 1-3@40%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—

lb.

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck....35%
Beach Pat., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks....40&10%
Universal, Reversible Jaws.....40%
Combination, Reversible Jaws....40%
Drill Chucks, New Model, 25%; Standard, 40&10%; Skinner Pat., 25%; Positive Drive.....33⅓%
Planer Chucks.....30%
Face Plate Jaws.....40&10%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combination, Nos. 82 and 84.....30%
Geared Scroll, Nos. 33, 34 and 35..35%
Independent Iron, Nos. 18 and 318.40%
Independent Steel, No. 64.....30%
Union Czar Drill, Nos. 000, 101, 103.....35%
Universal 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....40%
Steel Face Plate Jaws, Nos. 70 and 72.....35%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Carriage Makers', P., S. & W. Co.....40&10@50%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..₰ doz. $4.05 net
Star Shank, All Steel..₰ doz. $3.24 net
W. & C. Shank, All Steel, ₰ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
'98 Chicago Horse, each....$8.75
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
} 20%

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....70@—%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double, 65%; Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
Wm. Schollhorn Co.:
Excelsior Dividers.....60%
Lodi Dividers.....75%

Conductor Pipe,—

L. C. L. to Dealers:

Territory:	*Galvanized*		
	Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:			
	70&10%	60&7½%	40&10%
Central:			
	70&2½%	60%	40&7½%
Western and Southern:			
	65&10%	50&10&2½%	40&5%
	Galvanized		
	Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
So. Western			
	62½&7½%	50&5%	40&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal, each..	2	3	4	6	8
Labrador ...	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.....	3	4	6	8	
Iceland, ea..	$1.80	$2.10	$2.40	$3.00	
Gal.....	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles,					
Gal.....	2	3	4	6	8
Each.....	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled, 25%; Agate Lined, 25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 23@24¢; lighter than 3 lbs. to pair.....25@26¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 24½¢; No. 6, 25½¢.
Cable Laid Italian.....lb., A, 18¢; B, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..17@19¢
Patent Russia.....lb...@14¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted..lb. 12@13¢
Anniston Cordage Co.: ₰ lb, solid Braided, Nos. 8 to 12, $0.24; No. 7, $0.24½; No. 6, $0.25½; ₰ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ₰ lb, 25½¢; No. 7, 25¢; Nos. 8 to 12, 24½¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....₰ lb 23¢
Peerless:
Cable Laid, Italian, 16¢; Russian, 14¢; India.....12¢
Braided India.....18¢
Pullman:
Wire Sash Cord.....18%
Sash Cord Attachments, per doz.19¢
Samson, Nos. 8 to 12:
Braided, per lb., Drab Cotton, 40¢; Italian Hemp, 40¢; Linen, 55¢; White Cotton or Spot...35¢
Massachusetts, White.....₰ lb 30¢
Massachusetts, Drab.....₰ lb 35¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List Oct., '00.....
85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, gr. 6@6½¢
Cases, 100 gro., $5.00 at factory.

D. M. Steward Mfg. Co.:
Genuine. Per gro.
Round Pencil, $2.25; Square Pencil, $1.75; Flat Crayon, $2.50; Metal Workers' Crayon, $3.00; Rolling Mill Crayon, $3.00.

Compo. Per gro.
Round Pencil, $1.50; Square Pencil, $1.50; Flat Crayon, $1.50; Metal Workers' Crayon, $2.50; Rolling Mill Crayon, $2.50; Railroad Crayon, $4.00; Compo. Crayon, $4.00.

} Case lots, 50&20%. Case lots, 20%.

Zelnicker's Lumber:
Red, Blue, Green.....₰ gro. $6.50
Black.....₰ gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $7.00; Light.....$6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ₰ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₰ doz. $3.00
Wm. Rogers & Son.....₰ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50.....40&7½%
Dixon's.....₰ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....₰ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ₰ doz. $24.00.. 40@60%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....₰ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₰ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₰ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..₰ gr. $18@$20
Slaw Cutters, 2 Knife..₰ gr. $22@$30

Tobacco—

All Iron, Cheap..doz. $4.25@$4.50
Enterprise.....25@30%
National, ₰ doz., No. 1, $21; No. 2, $18.....40%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz. $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Vaughan Pattern Post Hole Augers, ₰ doz., $6.25
Perfection Post Hole Diggers, ₰ doz.....$8.25
Split Handle Post Hole Diggers, ₰ doz. $7.25
Kohler's, ₰ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.00; Pioneer.....$7.00
Never-Break Post Hole Diggers, ₰ doz., $24.00.....60%
Samson, ₰ doz. $34.00.....25%

Dividers—See *Compasses.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₰ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's, 40%; Weston's..40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ₰ doz., 2½-in., $6; 4-in., $7.50; 6-in., ₰.....50%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet...35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21 ...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....50&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles, 65%; No. 66, 75%; Victor, 55%; Defiance..70%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized*		
	Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:			
	80&2½%	70&7½%	40&10%
Central:			
	75&10&7½%	70%	40&7½%
Western and Southern:			
	70&20&7½%	60&15&2½%	40&5%
So. Western:			
	70&20%	65&2½%	40&2½%

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I. Gauge.....60&10%
No. 26.....50%

No. 24.....25%
No. 22.....10%
Copper.....50%

Elbows, Stove Pipe—
Dover, one piece.....40%
Perfect Elbows (R. M. Co.).....40%

Emery, Turkish—
¼ to 46 5¼ to 220 Flour.

Kegs	*lb. 5 ¢*	*5½ ¢*	*3½ ¢*
½ Kegs.....	*lb. 5¼ ¢*	*5¾ ¢*	*3¾ ¢*
¼ Kegs.....	*lb. 5½¢*	*6 ¢*	*4 ¢*

10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's.....50&10%
Walling's.....40&10%

Cord and Weight—
Ives.....40%

Faucets—
Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ⅝ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch.....	*15*	*17*	*19*	*21*
Per doz.....	$3.25	3.75	4.25	4.75

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Stowell's Giant Grindstone Hanger.. ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy, 50&10&10%; Light.....60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ey Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....gro. $4.50@6.00
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 25 & 10
Pike Mower and Tool Grinder, each.....$6.00 } 25 & 10

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web.....45%
Jute Rope.....45%
Sisal Rope.....33⅓%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.....70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties.....60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢....80&10%
Over 5 lb., per lb., 30¢..80&10&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—
Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—
Auger, assorted...gro. $2.50@$3.00
Brad Awl.....gro. $1.65@$1.75
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....$2.40@$2.65
Hickory Tanged Firmer, gro. assorted.....$2.15@$2.40
Apple Socket Firmer, gro. assorted.....$1.75@$1.95
Hickory Socket Firmer, gro. assorted.....$1.45@$1.60
Hickory Socket Framing, gro. assorted.....$1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80@85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, ℔ doz., No. 1, $8.00; No. 2.....$9.60
Allith No. 3, ℔ doz.....$21.00
Allith Adjustable No. 6, ℔ doz.$30.00
Reliable Parlor Door, ℔ set.....$2.50
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 19, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered.....60&2%
Special.....70&5%
Lawrence Bros.:
Advance and Sterling.....60&10%
Cleveland and Peerless.....75%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.....60&5%
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track No. 3...$2.00
Ball B'r'g St'l Track No. 10.50&10%
Roller B'r'g St'l Track No. 12.$2.15
Roller B'r'g St'l Track No. 13.$2.30
Roller B'r'g, Nos. 39, 41, 43, 70&10%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.10; No. 121, $2.25; No. 150.....$2.35
Safety Underwriters F. D. No. 101.....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132.....50&10%
Royal, Adjustable Track No. 122.....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43; 44, Sizes 1 and 2..70&10%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60&10%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135.....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas, 60%; Freight Car Door.60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic, 60%; Rex Hinge Door.60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door, 50&10%; Railroad, 50&10%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back, 70%; Eagle.....70%
Climax Anti-Friction.....50&10%
Hylo Hinge, New Perfection, Pilot, Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.00; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $15.00; Garment Hanger Loops, Round Nickeled, per gro.....$15.00
Victor Folding.....℔ gro. $9.00
Western, W. G. Co.....70&10%

Gate—
Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—
Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Extra 10% often given.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 1D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair.....	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair.....	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair.....	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 5, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges.....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5.....75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 65 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	.35

New England:
With Latch.....*doz.* ...@$2.00
Without Latch...*doz.* ...@$1.60
Reversible Self-Closing:
With Latch.....*doz.* ...@$1.75
Without Latch...*doz.* ...@$1.35
Western:
With Latch.....*doz. $1.75*
Without Latch.....*doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches..	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	1.35

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $3.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr. $9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges..65%
Heavy Strap Hinges..75%
Light T Hinges.....60%
Heavy T Hinges.....55%
Extra H'y T Hinges..70%
Hinge Hasps.....45%
Cor. Heavy Strap....75%
Cor. Ex. Heavy T..70&10%
Extra, 10&5@10&10%

Screw Hook and Strap. { *6 to 12 in.* ..lb. 3¾¢ / *1¼ to 20 in.* ..lb. 3½¢ / *22 to 36 in.* ..lb. 3¼¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6¼¢
⅝-inch.....lb. 7¼¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
Per doz.

Inch	*15*	*16*	*17*	*18*
Galv. Open	*$2.50*	*2.75*	*3.00*	*3.25*
Jap. Open	*$1.90*	*2.10*	*2.25*	*2.55*
Galv. Funnel	*$3.00*	*3.30*	*3.60*	*3.90*
Jap. Funnel	*$2.45*	*2.65*	*2.85*	*3.30*

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding No. 1, $2.00; No. 2, $2.28
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes; ₱ doz. 66⅔%
Regular Weight.....
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe..₱ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.36
Acme Wedding.....₱ doz., net, $4.36
W. & C. L'tning Shuffle Hoe, ₱ doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ₱ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....80%
Superior.....33⅓%

File and Tool—
Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....80%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....*80&10@..%*
Wire C. & H. Hooks:.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....70%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench. Hush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25*
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....*60&5@60&10&5%*
Malleable Iron.....*70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Guaranteed..*ft. 8 @ 9 ¢*
4-ply Guaranteed..*ft. 10 @11 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—
From ¼ to 10.....*lb. 3 @3¼¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:
Nos. *50 55 60 65*
Jap'd Tops....*68 65 78 75*
Tin'd Tops....*73 70 86 80*
New England Pressing.*lb. 3¾@4¢*

Pinking—
Pinking Irons.....*doz. 60¢*

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—
Wilkinson Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz. $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....*75&5@75&10%*
C. E. Jennings & Co., Nos. 45, 46...60%
Jennings & Gribbin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz.$5.75@6.00
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Mincing—
Buffalo.....₱ gro. $13.00

Miscellaneous—
Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....₱ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro.$1.25@$1.50*
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—
See *Belting, Leather.*

Ladders, Store, &c.—
Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%

Lanterns—Tubular—
Regular Tubular, No. 0.....
doz.$4.25@4.50
Lift Tubular, No. 0.....
doz.$4.75@5.00
Hinge Tubular, No. 0.....
doz.$4.75@5.00
Other Styles.....*40@40&5%*

Bull's Eye Police—
No. 1, 2¾-inch.....*$2.75@3.00*
No. 2, 3-inch.....*$3.00@3.25*

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..
doz. 35@40¢

Door—
Allith Mfg. Co., Automatic, No. 400, ₱ doz.....$4.00
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.30
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50
Stowell's Steel.....50%

Leaders, Cattle—
Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.

Lifters, Transom—
R. & E.....33⅓%

Lines—
Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.25*	*2.00*	*1.75*
75 feet	*$1.75*	*1.55*	*1.10*

Anniston Waterproof Clothes, 50 ft., ₱ gro. $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks...*33⅓@33⅓&7½%*

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%

Elevator—
Stowell's.....50%

Padlocks—
Wrought Iron....*75&10&5@80&5%*
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular.
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—
Reisinger Invincible Hand Power.....
₱ doz. $48.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$54.00
Champion Rotary Banner No. 1	$54.00
Standard Champion No. 1	$48.00
Standard Perfection	$26.00
Cinti Square Western	$30.00
Uneeda American, Round	$30.00

Mallets—
Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Apple-wood.....*doz. 45&5@50%*

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list..
50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria..50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60&5%
Great American.....70%
Great American Ball Br'g, new list..70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list..50%

Nails—
Wire Nails and Brads, Miscellaneous.....*85&10@85&10&5%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	*6*	*7*	*8*	*9*	*10*	
Ancnor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven..	23	21	20	19	18	...40&5%

Western.....₱ lb 3¼¢
Jobbers' Special Brands.....
per lb .9@10¢

Picture—

1½	*2*	*2½*	*3*	*3½ in.*
Brass H'd.45	*.55*	*.60*	*.70*	*.. gro*
Por. Head...	*1.10*	*1.10*	*1.10*	*.. gro*

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: Off list.
Square, Blank or Tapped..
4.90@5.00¢
Hexagon, Blank or Tapped..
5.30@5.40¢
Square, Blank, C. & T.5.20@5.30¢
Hexagon, Blank, C. & T...
5.90@6.00¢
Hot Pressed:
Square, Blank.....*5.10@5.20¢*
Hexagon, Blank.....*5.50@5.60¢*
Square, Tapped.....*5.00@5.10¢*
Hexagon, Tapped.....*5.40@5.50¢*

Oakum—
Best.....*lb.6¼@6½¢*
U. S. Navy.....*lb.5¾@6¢*
Navy.....*lb.4½@5¢*
Plumbers' Spun Oakum..*2½@3¢*
In carload lots ¼¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....*50&10%*
Tin or Steel.....*70@70&5%*
Zinc.....*70@70&5%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
National.....50&10%
Stowell's Sprague.....₱ doz. 35@45¢
Vim Tin Shear and Can Opener, ₱ doz., 75c.; per gro., $7.50

Egg—
Nickel Plate.....₱ doz., $2.00
Silver Plate.....₱ doz., $4.00

Packing—
Asbestos Packing, Wick and Rope.....*17@22¢*

Rubber—
(Fair quality goods.)
Sheet, C. I.....*11@12¢*
Sheet, C. O. S.....*11@12¢*
Sheet, C. B. S.....*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ₱ lb 80¢.....25@25&5%

Miscellaneous—
American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—
R. M. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ₱ doz.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.....*65&10%*

Fry
Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—
Regal, R. M. Co., ₱ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:

No. 40	50	60	140	180	160
$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos:	*lb.*	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.	*6¢*	*Net*
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.	*8¢*	*List*
Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in.	*7¢*	

Per roll
Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll
35@40¢
Medium weight, 30 lbs. to roll,
40@45¢
Heavy weight, 40 lbs. to roll..
56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$18.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—
1 ply (roll 500 sq. ft.). ton....
$32.50@35.50
2 ply, roll 108 sq. ft.....*55¢*
3 ply, roll 108 sq. ft.....*75¢*
Slater's Felt (roll 500 sq. ft.).70¢

Sand and Emery—
Flint Paper and Cloth..*50&10@60%*
Garnet Paper and Cloth.....*40%*
Emery Paper and Cl'h..*50&10@60%*

Parers— Apple—
Advance.....₱ doz. $4.80
Baldwin.....₱ doz. $4.80
Bonanza Improved.....each $6.50
Daisy.....₱ doz. $4.00
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $12.00
Little Star.....₱ doz. $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.25

Reading 78.....per doz. $6.25
Rocking Table.....per doz. $6.20
Turn Table '98.....per doz. $6.00
White Mountain.....per doz. $5.00

Potato—
Saratoga.....per doz. $7.00
White Mountain.....per doz. $6.00

Picks and Mattocks—
List Feb. 23, 1899.....75%
Cronk's Handled Garden Mattock, per doz., $6.40.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass.....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Carload lots.
Standard, 2-6 in..50&10@50&10&5%
Extra Heavy, 2-6 in......65&10%
Fittings.....70&10@70&10&5%

Pipe, Merchant—
Consumers, Carloads.

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
⅛ & ¼ in.	71%	55%	68%	52 %
⅜ in.	73%	59%	70%	56 %
½ in.	75%	63%	72%	60 %
¾ to 6 in.	79%	69%	76½%	66½%
7 to 12 in.	74%	59%	71½%	56 %

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey.71%
*Maryland, Delaware, E. Pa.*73%
West. Pa. and West Va....75%
Virginia.....76%
Ohio, Michigan and Ky....75%
Indiana.....77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested:	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding.....33⅓&10%
Bailey's (Stanley R. & L. Co.)....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

Iron Planes—
Bailey's (Stanley R. & L. Co.).....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Union.....60%

Plane Irons—
Wood Bench Plane Irons.....25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....per doz. $8.50

Plates—
Felloe.....lb. 4@4¼¢
Self-Sealing Pie Plates (R. M. Co.). per doz. $2.00.....50%

Pliers and Nippers—
Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.50; 6 in., $1.45 @ $1.50.
Gas Pipe..

7	8	10	12-in.
$2.00	$2.25	$3.00	$3.75

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....40%
P., S. & W. Tinners' Cutting Nippers.....60%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Elm City.....33⅓%
Lodi.....50%
Paragon.....50%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
E. E. Jennings & Co.'s Iron.....33⅓%
E. E. Jennings & Co.'s Iron, Adjustable.....60&7½%
Stanley R. & L. Co.....40%
Stanley's Duplex.....30%
Stanley's Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, per doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—
Bulk and 1-lb. papers.....lb. 10¢
1-lb. papers.....lb. 9@10¼¢
2-lb. papers.....lb. 9¾@11¢

Pokes, Animal—
Ft. Madison Hawkeye.....per doz. $3.25
Ft. Madison Western.....per doz. $4.00

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder), each, $1.25; per doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; per doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), per doz., $3.00; No. 2 (1 qu.), $5.72....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, per doz. 50¢; per gro. $4.50; ½ lb boxes, per doz. $1.25; 1 lb boxes, per doz. $2.25.
U. S. Liquid, 8 oz. cans, per doz., $1.25; per gro., $12.00.
Barkeepers' Friend Metal Polish, per doz., $1.75; per gro., $18.00.
Wynn's White Silk, ½ pt. cans, per doz.....$2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans, per lb 10¢
Black Eagle, Liquid, ½ pt. cans.. per doz. 75¢
Black Jack Paste, ¾ lb cans, per gr. $9.00
Black Kid Paste, 5 lb can.....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, per gr. $5.75.....10%
Dixon's Plumbago.....per lb 8¢
Fireside.....per gr. $2.50
Gem, per gr. $4.50.....10%
Japanese.....per gr. $3.50
Jet Black.....per gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. per doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....per doz. $1.00
Black Silk, 5 oz. box.....per doz. $0.75
Black Silk, ½ pt. liq.....per doz. $1.00

Poppers, Corn—
1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled.....40%
Tinned.....35%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50
King's Smokeless: Shot Gun. Rifle.
Keg (25 lb bulk).....$12.00 $15.00
Half Keg (12½ lb bulk).. 6.25 7.75
Quarter Keg (6¼ lb bulk).. 3.25 4.00
Case 24 (1 lb cans bulk).. 14.00 17.00
Half case 12 (1 lb c. bk).. 7.25 8.75
Robin Hood Sm'less Shot Gun..50&20%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, per doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Cork—
Invincible Cork Puller.....$21.00

Pullers, Nail—
Cyclops.....50%
Miller's Falls, No. 3, per doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, per doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... per doz. $6.00
Diamond B, No. 3, case lots..... per doz. $5.50
Giant No. 1, per doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, per doz. 75c.; per gro., $6.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.50	.55	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55

Inch	2	2¼	2½
Hot House, doz.	$0.65	.85	1.20
Inch	1¼	1½	1¾ 2
Screw, doz.	$0.16	.19	.23 .30
Inch	1¾	2	2¼ 2½
Side, doz.	$0.25	.40	.55 .60
Inch	1½	1¾	2 2½

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&13%

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in......16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... per doz. 50
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in..16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 1½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....per doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—
Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch...	3	3¼	3½	3¾ 4
	$3.30	3.60	3.85	4.10 4.40

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—
Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality.....$1.75@2.00
Revolving (4 tubes)..... doz. $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi.....50%
Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co....40%
Tinners' Solid, P., S. & W. Co., per doz., $1.44.....60%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Allith Mfg. Co.: Reliable Hanger Track, per ft., No. 1, 5½¢; No. 2, 7¢; No. 3.....12½¢
Cronk's:
Double Braced Steel Rail..per ft. 2¾¢
O. N. T. Rail.....2½¢
Griffin's:
xxx, per 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, per 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, per 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T., per 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....per 100 ft. $4.00
Lawrence Bros.:
per 100 ft., No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., per 100 ft., $2.75
McKinney's:
Hinged Hanger Rail, per ft., 11¢..50%
None Better.....per ft. 3¾¢
Standard.....per ft. 4¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, per ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....per ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in.....per ft. 3¢
Wrought Bracket, 1½ x 5-16...per ft. 7¢
Swett's Hylo, per ft. 11¢.....60%
F. L. B. Steel Rail.....per 100 ft. $3.00
No. 0, 1 x 3-16.....per 100 ft. $2.75

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, per doz., net.....$4.25
Cronk's:
New Champion Garden, per doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, per doz. 12 teeth, $15.00; 14, $16.50; 16, $18.00.....60%
Queen City Lawn, per doz., 20 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, per doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....per doz. $3.45
Lawn Queen, 24-tooth.....per doz. $3.60
Paragon, 20-tooth.....per doz. $2.75
Paragon, 24-tooth.....per doz. $3.00
Steel Garden, 14-tooth....per doz. $2.40
Malleable Garden, 14-tooth, per doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—
Disston's.....75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Boss—I. C.....60%
Fox Razors, No. 47..per doz. $20.00
Fox Razors, No. 44..per doz. $20.00
Fox Razors, No. 82, Platina..per doz. $25.00
Red Devil.....50%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—
Kampfe Bros.:
Star Safety.....25%
Star Interchangeable.....25%
Star Safety Corn.....25%
Silberstein.....40%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed.....70&10%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal..$1.85
Double Action, 44 caliber....$2.00
Automatic.....$3.45
Hammerless.....$4.00

Riddles, Hardware Grade
16 in.....per doz. $2.50@$2.75
17 in.....per doz. $2.75@$3.00
18 in.....per doz. $3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.00	1.15	1.40 doz.

Rea's Improved Self-Piercing, Copper, 2 in., per doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron.. doz. 70@75¢
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—
Copper.....45@45&5%
Iron or Steel.....75@75&5%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Acme, Stowell's Anti-Friction.....50%
Cronk's Stay No. 65, $0.90; No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..per doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....per doz. 65¢
Hinge Adjustable Stay.....per doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger:
Pure.....lb., 12½¢
Sisal, 7-16 in. diam. and larger:
Pure.....lb. 9½¢
Sisal, 7-16 in. diam. and larger:
No. 2 quality.....lb., 8¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed.....lb., 8¢
Pure.....lb. 9½¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Mixed.....lb. 8¢
Pure.....lb. 9½¢
Cotton Rope:
Best, ¼-in. and larger.16½@18¢
Medium, ¼-in. and larger...... 15½@16¼¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope:
Thread No. 1, ¼-in. & up.lb.7¢
Thread No. 2, ¼-in. & up.lb.6¼¢
Old Colony Manila Transmission Rope.....per lb 17½¢

Wire Rope—
Galvanized.....37½&2½%
Plain.....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute.....45%
Sisal.....33⅓%
Covert Saddlery Works.....60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple.....30&10%

Rules

Boxwood ..... 60&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Flexifold ..... 27½&10&10&2½%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber 60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag 40%
Zig Zag, Pin Joint 42½%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 50%
Band ..... 50&10@60
Cross Cuts ..... 35&5%
Mulay, Mill and Drag 50%
One-Man Saw 40%
Wood Saws 40%
Hand, Compass, &c 40%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 50&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 14 in. wide 60%
Band, ⅛ to 1¾ 60%
Crosscuts 50%
Narrow Crosscuts 55%
Mulay, Mill and Drag 50%
Framed Woodsaws 35%
Woodsaw Blades 35%
Woodsaw Rods 25%
Hand Saws, Nos. 12, 99, 9, 16, d100 ..... 25%
D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1 ..... 30%
0, 00, Combination 30%
Compass, Key Hole, &c 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 25%
Butcher Saws 30%
Compass and Key Hole Saws ..... 35&5%
Framed Wood Saws 30%
Hand Saws ..... 20&2½%
Wood Saw Blades 35%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 50%
Crescent Ground Cross Cut Saws 35%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 50%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c ..... 25@25&7½%
Wood Saws ..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws ..... 40&10@50%
Butcher Saws Blades ..... 35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saws—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 25%
Keystone 40%
Hack Saw Frames 30%
Fitchburg File Works, The Best 35%
C. E. Jennings & Co.'s
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, ... 40&7½%
Goodell's Hack Saw Blades 40%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades 35%
Diamond Hack Saw Frames 50%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..... 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..... 10%
Victor Hack Saw Blades 25%
Victor Hack Saw Frames 40%

Scroll—

Barnes' No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $4.00 ..... 15&10%

Scalers, Fish—

Covert's Saddlery Works ..... 60&10%

Scales—

Family, Turnbull's ..... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to ¼ lbs. ..... *doz. $5.50*
Two Platforms, ½ oz. to 8 lbs. ..... *doz. $16.00*
Union Platform, Plain ..... $1.70@1.90
Union Platform, Stpd. ..... $1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
Chicago Scale Co.:
The "Little Detective" ..... 25 lbs 50%
Union or Family No. 2 ..... 60%
Portable Platform (reduced list) 50%
Wagon or Stock (reduced list) ..... 25@35%
"The Standard" Portables 50%
"The Standard" R. R. and Wagon 50%

Scrapers—

Box, 1 Handle ..... *doz. $2.00@2.25*
Box, 2 Handle ..... *doz. $2.60@2.85*
Ship ..... *Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00 ..... 45%
Chapin-Stephens Co., Box ..... 30@30&10&10%

Screens, Window and Frames—

Maine Screen Frames ..... 40&10&5%
See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼ $3.50@3.75
Bench, W'd, Beech. doz. ..... 30@30&5%
Hand, Wood ..... 30@30&5%
R. Bliss Mfg. Co., Hand ..... 30@30&10%
Chapin-Stephens Co., Hand ..... 30@30&10%
Ohio Tool Co., Bench and Hand 30%

Coach, Lag and Hand Rail—

Lag, Cone Point, list Oct. 1, '99 ..... 75&15%
Coach, Gimlet Point, list Oct. 1, '99 ..... 75&10%
Hand Rail, list Jan. 1, '81 ..... 70&10@75%

Jack Screws—

Standard List ..... 75&5@75&10%
Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W. 50%
Swett Iron Works ..... 75&10@60&5%

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron ..... 50@50&10%
Flat or Round Head, Brass ..... 50@50&10%

Set and Cap—

Set (Iron) 80%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap 75%
Hex. Hd. Cap 75%
Rd. Hd. Cap ..... 60&10%
Fillister Hd. Cap ..... 60&10&10%

Wood—

List July 25, 1903.
Flat Head, Iron ..... 87½&10@..%
Round Head, Iron ..... 85 &10@..%
Flat Head, Brass ..... 85 &10@..%
Round Head, Brass ..... 80 &10@..%
Flat Head, Bronze ..... 77½&10@..%
Round Head, Bronze ..... 75 &10@..%
Drive Screws ..... 87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—

Per doz.
Grass, No. 1, Plain ..... $6.25@6.75
Clipper, Bronzed Webb ..... $6.50@7.00
No. 3 Clipper, Pol'd Webb ..... $6.75@7.25
No. 6 Clipper and Solid Steel, ... $7.00@7.50
Bush, Weed and Bramble, No. 2 ..... $6.50@7.00
Grain, No. 1 ..... $8.25@8.75
Bronzed Webb, No. 1 ..... $8.50@9.00
Nos. 3 and 4 Clipper, Grain ..... $8.75@9.25
Solid Steel, No. 6 ..... $9.25@9.75

Seeders, Raisin—

Enterprise ..... 25&30%

Sets—Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..... 15&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00

Sets, Nail—

Octagon ..... *gro. $3.50@3.75*
Buck Bros. 27½%
Cannon's Diamond Point, ℔ gro. $12.40
Mayhew's ..... ℔ gro. $9.00
Snell's Cor'gated, Cup Pt. ..... ℔ gro. $7.20
Snell's Knurled, Cup Pt. ..... ℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. ℔ gro. $7.50

Rivet—

Regular list ..... 75&75&10%

Saw—

Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut 30%
Plate 20%
Disston's Star and Monarch 25%
Morrill's No. 1, $15.00 ..... 50%
Nos. 3 and 4, Cross Cut, $20.00 ..... 50%
No. 5, Mill, $30.00 ..... 50%
Nos. 10, 11, 85, $15.60 ..... 50%
No. 1 Old Style, $10.00 ..... 50%
Special, $16.25 ..... 50%
Giant Royal Cross Cut ..... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 60%

Sharpeners, Knife—

Chicago Wheel & Mfg. Co. 70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50
} ℔ $3

Skate—

Smith & Hemenway Co. 20%

Shaves, Spoke—

Iron ..... *doz. $1.10@1.25*
Wood ..... *doz. $1.75@2.25*
Bailey's (Stanley R. & L. Co.) 45%
Razor Edge (Stanley R. & L. Co.) 35%
Chapin-Stephens Co. ..... 30@30&10&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%
Wood's F1 and F2 ..... 50%

Shears—

Cast Iron..	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap ..... 70@70&10%
Best quality, Nickel ..... 60@60&10%
Fair quality, Jap ..... 80@80&5%
Fair quality, Nickel ..... 75@7"&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson's Sheep, 1900 list, 30&10&5%; Grass, 50&10%; Horse or Mule, 50&10%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin, ... 50@50&5%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in. 50%
Niagara Snips 40%
P., S. & W. Forged Handles 20%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 50&10%
P., S. & W. Co. 33⅓%
Wilkinson's Hedge, Wilcut Brand, ... 60&10%
Wilkinson's Lawn and Border, Wilcut Brand ..... 60&10%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Reading 40%
R. & E. list 33⅓%
Wrightsville Hatfield Pattern 50%

Sliding Shutter—

Reading list 40%
R. & E. list 33⅓%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge ..... 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge ..... 25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge 25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge 20%
Expert, Metal Lined and Pigeon, 10 12, 16 and 20 gauge 33⅓
Robin Hood, Low Brass ..... 20&5%
Robin Hood, High Brass ..... 30&5%

Shells, Loaded—

Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass 50%
Comets, High Brass ..... 50&10&5%

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg $4.00
Steel ..... per keg $3.75
Burden's, all sizes ..... ℔ keg $3.90

Shot—

Drop, up to B, 25-lb. bag $1.85
Drop, B and larger ..... *per 25-lb. bag, $2.10*
Buck, 25-lb. bag $2.10
Chilled, 25-lb. bag $2.10
Dust, 25-lb. bag $2.30

Shovels and Spades—

Association List, Nov. 15, 1902 ..... 40%

Snow Shovels—

Long Handle ..... $2.75@$3.00
Wood and Mall. D. Handle. ..... $3.25@$3.50

Sieves and Sifters—

Hunter's Imitation ..... *gro. $9.50@10.00*
Hunter's Genuine ..... *per gro. $12.00@12.50*
Buffalo Metallic Blued, R. M. Co., ℔ gr.

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00 ..... 20%

Sieves, Seamless Metallic

—Per dozen.—

Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested ..... *doz. $0.90@0.95*
Mesh 20, Nested ..... *doz. $1.00@1.05*
Mesh 24, Nested ..... *doz. $1.30@1.40*

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in ..... 60&5%
20 x 40 to 24 x 50 in 55%
24 x 60 to 24 x 120 in 35%
Barnes' low list:
Up to and including 20 x 36 in 60%
20 x 40 to 24 x 50 in 55%
NOTE—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 80@80&10%
Steel ..... 40@40&10%

Slates, School—

Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless ..... *60&5 tens*
Victor A, Noiseless ..... *60&4 tens &5%*

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby ..... 30&2%
High Grade 45%
Jockey 35%
Trojan 45%
Yankee ..... 30&2%
Yankee Roller ..... 30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Harness Snaps, 1 inch ..... 60&5%
Swivel Snaps 60%
Swivels 50%

Snaths—

Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous—

German Silver ..... 60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver 50%

Tinned Iron—

Teas ..... *per gro. 45@50¢*
Tables ..... *per gro. $0.50@$1.00*

Springs—Door—

Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 25%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 30 in. ..... ℔ doz. $1.10

Carriage, Wagon, &c.—

1¼ in. and Wider: *Per lb*
Black ..... 4@4¼¢
Half Bright ..... 4@4¼¢
Bright ..... 4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26 ..... *per pr. 42¢*
1½ x 3 x 28 ..... *per pr. 70¢*

Sprinklers, Lawn—

Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24 ..... 30%
Pleuger & Henger Mfg. Co.:
Cactus 70%
Japanese 75%
Nationals 65%

Squares—

Nickel plated } *List Jan. 5, 1900.*
Steel and Iron } 75&10@75&10&5%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Sq. and T-Bevels 70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2 ..... 50%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz. $1.00*
Good Grade ..... *doz. $1.25*
Tinned Iron ..... *doz. $0.75@1.25*
Iron, Porcelain Lined ..... *doz. $1.75*

Staples—

Barbed Blind ..... *lb. 6@6½¢*
Electricians', Association list ..... 80&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples ..... *per lb. 3¼@3½¢*
Grand Crossing Tack Co.'s list ..... 80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%
C. & A. Hoffmann's 10%

Steelyards—30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones—Oil, &c.

Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit 60%
Gem Corundum Axe, Single or Double Grit 60%
Gem Corundum Slips 60%
Gem Corundum Razor Hones 50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5¼ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 30¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
} 33⅓%
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks 33⅓%

Hindostan No. 1, R'g'lar. ₱ lb 8¢
Hindostan No. 1, Small.. ₱ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in. ₱ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
} 33⅓%

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₱ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ₱ gro. $9.00
One gross or more ₱ gro. $7.20
Lots of 10 gross or more ₱ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S. ₱ gro. $6.00
Extra Indian Pond S.S. ₱ gro. $7.50
No. 1 Indian Pond S.S. ₱ gro. $7.00
No. 2 Indian Pond S.S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
} 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, dos. 60@60&10%
Socket doz. $1.60
Bullard, ₱ doz. $4.00
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

Strops, Razor—

Star Diagonal Strop 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (23 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire ₱ doz $25.00
Model A, Sterling ₱ doz. $25.00
Model B, Sterling, Nickeled ₱ doz. $23.00
Model B, Sterling, Japanned ₱ doz. $21.00
Model C, Sterling ₱ doz. $21.50
Model D, Sterling ₱ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.
American Carpet Tacks 90&10@—%
American Cut Tacks 90&10@—%
Swedes Cut Tacks 90&10@—%
Swedes Upholsterers' 90&50@—%
Gimp Tacks 90&50@—%
Lace Tacks 90&10@—%
Trimmers' Tacks 90&10@—%
Looking Glass Tacks 65@—%
Bill Posters' and Railroad Tacks, 90&50@—%
Hungarian Nails 85@—%
Finishing Nails 70&10@—%
Trunk and Clout Nails 80@—%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&5 *or 6 tens*

See also Nails, Wire.

Tanks, Oil— Each.

Emerald, R. M. Co. 30-gal. $3.40
Emerald, R. M. Co. 60-gal. $4.25
Queen City, R. M. Co. 30-gal. $3.65
Queen City, R. M. Co. 60-gal. $4.50

Tapes, Measuring—

American Asses' Skin 50@—%
Patent Leather 25@40&5%
Steel $3 1-3&5%
Chesterman's 25@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%

Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c. 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 60%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ₱ doz. $13.25
No. 3, Rat, ₱ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ₱ gro. $4.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ₱ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ₱ gro. $6.00
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern ₱ doz. $18.50
McKinney Trucks each $10.00
Model Stove Trucks ₱ doz. $18.50

Tubs, Wash— *No. 1 2 3*

Galvanized, per doz. $4.25 4.75 5.25
Galvanized Wash Tubs (R. M. Co.):
No. 1 2 3 10 20 30
Per doz., net. $5.70 6.30 7.20 6.60 7.20 8.10

Twine, Miscellaneous—

Flax Twine: *BC. B.*
No. 9, ¼ and ½-lb. Balls .22@24¢
No. 12, ¼ and ½-lb. Balls .18@20¢
No. 18, ¼ and ½-lb. Balls .16@18¢
No. 24, ¼ and ½-lb. Balls .16@18¢
No. 36, ¼ and ½-lb. Balls .15@17¢
Chalk Line, Cotton ½-lb. Balls 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. .10@18¢
Cotton Wrapping, 5 Balls to lb., acording to quality .14½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls .13@14¢
American 3-Ply Hemp, 1-lb. Balls .13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) .9¢
India 3-Ply Hemp, 1-lb. Balls .9¢
India 3-Ply Hemp, 1½-lb. Balls. 7½@8½¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls .9½@10½¢
Mason Line, Linen, ½-lb. Bls. 16¢
No. 24 Mattress, ¼ and ½-lb. Balls .37¢
Wool, 3 to 6 ply .B 7¢; A 7½¢

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch 50%
Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg Co. Double Swivel.. 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz. $30 25%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%
Williamson Mfg. Co. Double Swivel Combination Pipe 40&5%

Wads—*Price per M.*

B. E., 11 up .60¢
B. E., 9 and 10 .70¢
B. E., 8 .80¢
B. E., 7 .80¢
P. E., 11 up .$1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Ely's B. E., 11 and larger .$1.70@1.75
Ely's P. E., 12 to 20 .$3.00@3.25
Dis. 15%

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .85%
Ground .60%
Plain or Unground .65%
Country, Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles .70%
Covered Wares
Tinned and Turned .40%
Enameled .50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:
Inch 6 7 8 9
Each .45¢ 50¢ 55¢ 65¢

Steel Hollow Ware—

Avery Spiders and Griddles .65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone .40@40&10%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame. $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid .80&10@80&10&10%
Patent .90@90&5%
Coil: ¼ ⅜ ½ 1¼ *Inch.*
10¢ 11¢ 12¢ 13¢ *per box*

Iron or Steel—

Size bolt .5-16 ⅜ ½ ⅝ ¾
Washers .$5.60 4.70 3.40 3.20 3.00
The above prices are based on 5.80¢ off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots per lb. 1¾@2¢

Weather Strip—Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish .lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co. 40%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District .$27.50@$28.00
Southern Territory .$20.00@$23.00
Western and Central Districts $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 .80%
10 to 18 .80&2½%
19 to 26 .80&7½%
27 to 36 .80&2½%
Galvanized:
6 to 9 .75&5%
10 to 14 .75&7½%
15 to 16 .72½&10&2½%
19 to 26 .75%
27 to 36 .72½%
Coppered:
6 to 9 .75&5%
10 to 14 .75&7½%
15 to 18 .72½&10&2½%
19 to 26 .75&10&5%
27 to 36 .75%
Tinned:
6 to 14 .75&10&2½%
15 to 18 .75&7½%
Annealed, Steel and Tinned, on Spools .70&10&10@70&10&10&10%
Brass and Copper on Spools .60&5@60&10&5%
Brass, list Feb. 26, '96 .15%
Copper, list Feb. 26, '96 .25%
Cast Steel Wire .50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24 '03 .90&20@90&25%
Brass Cup Hooks and Brass Screw Hooks .85@—%

Wire Cloth and Netting—

Galvanized Wire Netting .80&5@80&10%
Painted Screen Cloth, 100 ft., $1.00@1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3 ¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .75&10&5@80%
Alligator or Crocodile .70&10@75%
Baxter Pattern S Wrenches .70&5@70&10%
Drop Forged S .45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ₱ doz. $6.25
Elgin Rethreading Attachment, one die, ₱ doz. $2.25
Elgin Extra Dies, ₱ doz. $3.00
Elgin Extra Jaws, ₱ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz. $2.10
Gem Pocket 70%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W. 50&5%
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ₱ doz. $48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '02 .90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed. 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet .per 100 lbs., $7.90@8.15

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:
1 to 1⅝ in. round and square ... ₩ ℔ 2.00¢
1⅝ to 4 in. x ⅜ to 1 in. ... ₩ ℔ 2.00¢
1½ to 4 in. x ¼ to 5-16 ... ₩ ℔ 2.20¢
Rods—⅜ and 11-16 round and square ... ₩ ℔ 2.20¢

Angles:	Cts ₩ ℔
3 in. x ¼ in. and larger (except 3½ in. and 4 x ¼ 2.50¢)	2.40¢
3 in. x 3-16 in. and ⅛ in.	2.55¢
1½ to 2½ in. x ¼ in.	2.35¢
1½ to 2¾ in. x 3-16 in. and thicker	2.50¢
1 to 1¼ in. x 3-16 in.	2.55¢
1 to 1¼ x ⅛ in.	2.60¢
⅝ x ⅛ in.	2.55¢
½ x ⅛ in.	2.65¢
⅜ x ⅛ in.	3.70¢
¼ x 3-32 in.	4.20¢
Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ in.	2.35¢
3 in. and larger	2.50¢
Beams	2.30¢
Channels, 3 in. and larger	2.30¢
Bands—1½ to 6 x 3-16 to No. 8	2.35¢
"Burden's Best" Iron, base price	3.05¢
Burden's "H. B. & S." Iron, base price	3.00¢
"Lister"	3.10¢
Norway Bars	3.40¢
Norway Shapes	3.80¢

Merchant Steel from Store—

	per ℔
Passenger Machinery	2.00¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black.

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ ℔ 2.70	2.80¢
Nos. 18 to 21	₩ ℔ 2.85	2.90¢
No. 27	₩ ℔ 3.00	3.00¢
No. 28	₩ ℔ 3.10	3.10¢

Russia, Planished, &c.

Genuine Russia, according to assortment ... ₩ ℔ 11½@14¢
Patent Planished ... ₩ ℔ A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16 ... ₩ ℔, 3.05¢
Nos. 22 to 24 ... ₩ ℔, 3.45¢
No. 27 ... ₩ ℔, 3.90¢
No. 28 ... ₩ ℔, 4.15¢
No. 20 and lighter 36 inches ... c. 25¢ higher.

Tin Plates—

American Charcoal Plates (per box.)

A.A.A. Charcoal:
IC, 14 x 20 ... $6.45
IX, 14 x 20 ... 7.70

A. Charcoal:
IC, 14 x 20 ... $5.50
IX, 14 x 20 ... 6.70

American Coke Plates—Bessemer—
IC, 14 x 20 ... 108 ℔ ... $4.50
IX, 14 x 20 ... 6.50

American Terne Plates—
IC, 20 x 28 with an 8 lb. coating ... $8.70
IX, 20 x 28 with an 8 lb. coating ... 10.70

Seamless Brass Tubes—

Outside Diameter. Net. Base Price 22¢

Stubs' W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	..	..	..	..	..	..	..	..	..	..	22	22
12	..	..	..	..	..	..	28	28	27	27	22	22
13	..	..	..	..	..	..	29	29	27	27	22	22
14	..	..	..	..	29	29	29	27	27	27	23	23
15	..	..	..	30	29	29	29	27	27	27	23	23
16	..	..	30	30	29	29	29	27	27	27	24	24
17	..	33	30	30	29	29	29	27	27	27	25	25
18	33	33	31	31	30	30	30	28	28	28	26	26
19	32	33	31	31	30	30	30	28	28	28	27	27
20	64	25	31	31	30	30	30	28	28	28	28	28
21	66	51	33	32	32	30	29	29	29	29	29	29
22	71	56	35	35	33	33	31	30	30	30	30	30
23	76	61	37	37	35	35	33	33	33	33	33	33
24	81	66	58	48	46	45	44	43	41	40	40	41
25	86	71	56	51	49	47	46	45	44	44	45	46

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	⅝	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
30	29	24	23	22	22	22	22	22	22	23	24	26	28	29	₩ ℔

Brazed Brass Tubing.

Discount from List June 6, 1898, 20&5%.
Bronze and Copper Tubing advance on Brass List 3¢

Roll and Sheet Brass—

Discount from List June 6, 1898, 15%.

Brass Wire.

Discount from List June 6, 1898, 15%

Brass Rods.

Discount from List 15%

METALS—

Tin—

Straits Pig ... ₩ ℔ 40⅝@40¾¢

Copper—

Lake Ingot ... ₩ ℔ 19 @19¼¢
Electrolytic ... ₩ ℔ 18¾@18⅞¢
Casting ... ₩ ℔ 18½@18⅝¢
Sheet Copper Hot Rolled, 16 oz. ... ₩ ℔ 21¢
" " 14 " ... " " 24¢
Sheet Copper Cold Rolled, 1¢ ₩ ℔ advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ... ₩ ℔ 27¢ basis
Planished Copper, 1¢ ₩ ℔ more than Polished.

Spelter—

Western ... ₩ ℔ 6¼ @ 6¾¢

Zinc.

No. 9, base, casks, ₩ ℔ 8¼¢ | Open ... ₩ ℔ 8½¢

Lead.

American Pig ... ₩ ℔ 5¾@6 ¢
Bar ... ₩ ℔ 6¾@7 ¢

Solder.

½ & ½, guaranteed ... ₩ ℔ 23½@24 ¢
No. 1 ... ₩ ℔ 21¾@22¼¢
Refined ... 20@20¼
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson ... ₩ ℔ 29@30¢
U. S. ... 29@30¢
Other Brands ... 28@29¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots ... nominal
100-℔ lots ... nominal

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Copper, Heavy Cut and Crucible ... ₩ ℔ 16.75¢
Copper, Heavy and Wire ... ₩ ℔ 16.50¢
Copper, Light and Wire ... ₩ ℔ 15.00¢
Heavy Brass ... ₩ ℔ 11.50 ¢
Light Brass ... ₩ ℔ 9.25 ¢
Lead ... ₩ ℔ 5.40 ¢
Tea Lead ... ₩ ℔ 5.10 ¢
Zinc ... ₩ ℔ 4.75 ¢
Pure Aluminum, Sheet ... ₩ ℔ 26 ¢
No. 1 Yard Wrought ... $16.00@17.00
Wrought Pipe ... $13.00@13.50
No. 1 Machinery Cast ... $14.00@14.75
Stove Plate ... $10.50@11.00

THE IRON AGE

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